A Professional Press Publication

HP Professional

AN INDEPENDENT PUBLICATION FOR USERS OF HP COMPUTERS ■ VOL. 2 ■ NO. 12 ■ $4.00

DECEMBER 1988

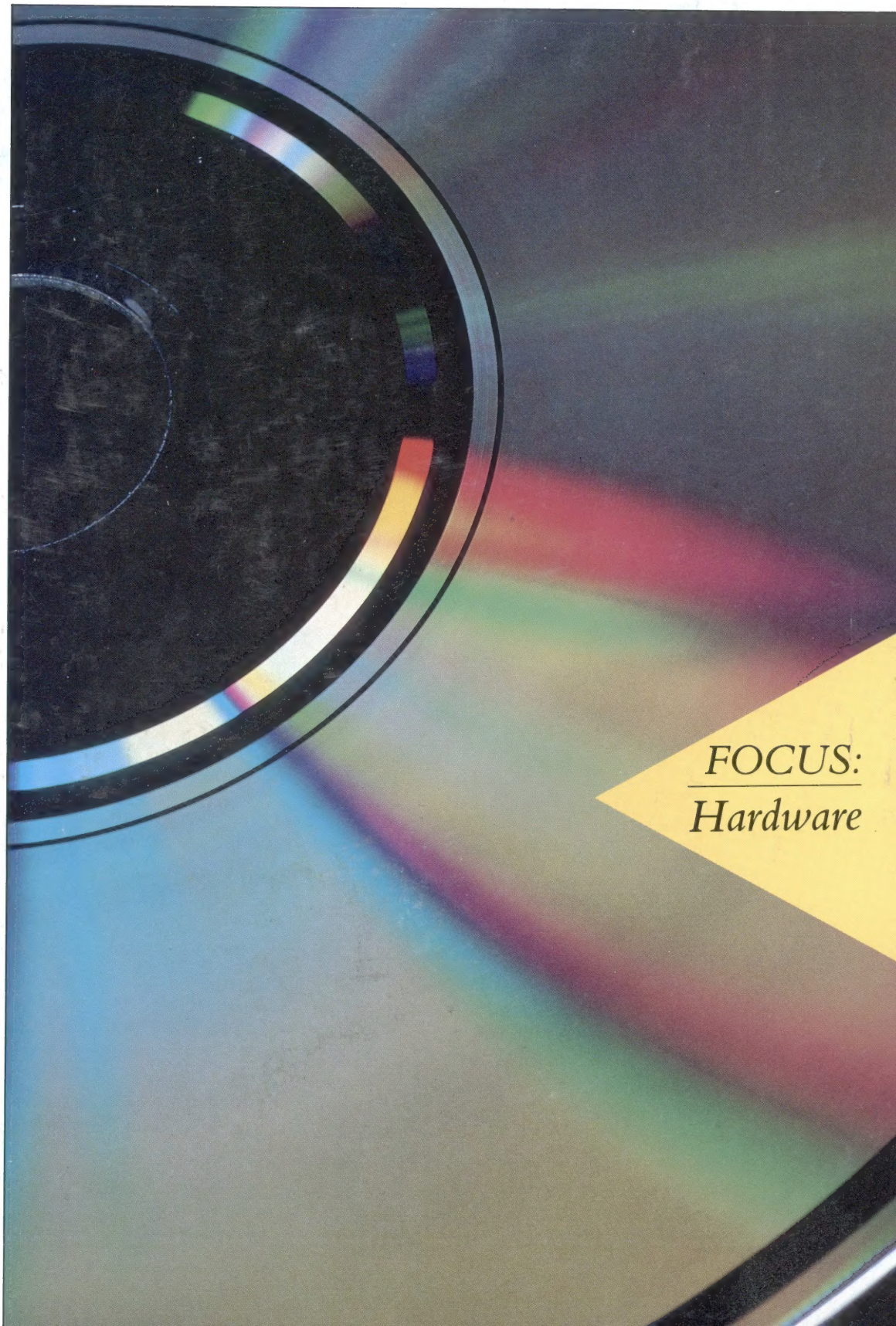
■ Making The Move To Optical Disc Storage

■ Used Equipment In The HP Market

■ LaserMaster CAPCard FONTASTIC

JetScript

For The LaserJet II



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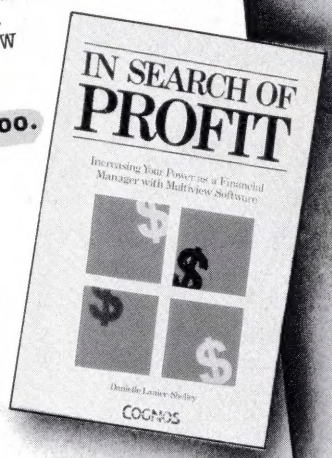

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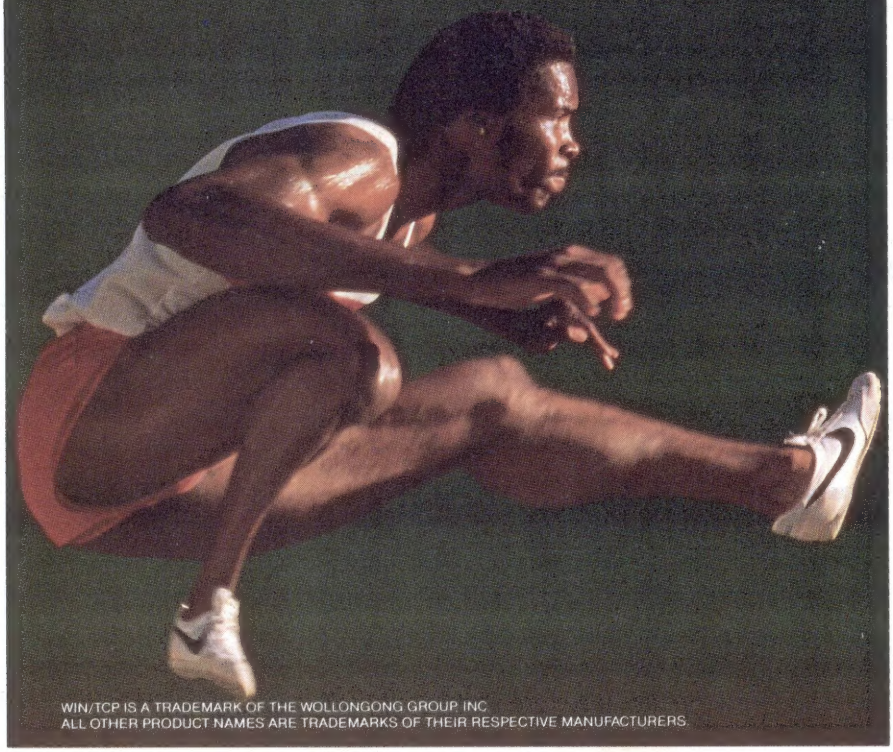

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season's greetings

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What To Do When Satisfied Customers Hurt Profits?

HP followed IBM's lead in offering extended warranties to new computers and peripherals. As a result, revenues from service on HP equipment are falling. The decline in HP's service revenues is exacerbated by the high reliability of HP equipment. A 1987 input study comparing the five major minicomputer vendors shows that HP customers have the lowest annual maintenance charge in relation to the purchase price of the equipment. In 1987, the maintenance charge for new equipment averaged 4.3 percent of the purchase price, down from 8.7 percent of the purchase price in 1981. HP has satisfied customers but diminished maintenance revenues.

To make up for the loss in service revenues, HP once again has followed the lead of other major vendors, most notably IBM and DEC, by offering more support services in competition with third-party providers of equipment and services. These services include refurbishment and reselling of used equipment, disaster recovery services and, most recently, multivendor support.

The trend began five years ago when HP began remanufacturing and reselling its own used equipment through the Finance and Remarketing Division (FRD). During the past year, FRD has expanded its product line by entering the market for refurbished 9000 workstations and opening new offices outside the U.S.

On July 1, 1988, HP announced its entry into the disaster recovery market. In conjunction with Weyerhauser Information Service, HP offers its 3000 business customers disaster planning and consulting and backup operating capability (both hot-site and cold-site) from a facility in Tacoma, WA.

Just eight weeks later, HP announced its entry into the third-party market, once again trailing DEC, IBM and other major vendors. Rather than compete head-on with the big players in the market, HP has defined its niche as the office. The newly formed Multivendor Support Operation will service office equipment including PCs, monitors, plug-in boards, communications devices and networks.

Although HP is starting small, the shrinking service revenues from new equipment may signal a trend toward offering even more services to older machines and equipment from other vendors. HP has entered the race to become a single-vendor support solution as a way to compete in a multivendor world. *—Peggy King*

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The card on the front of this issue is your ticket to receiving future free issues of *HP PROFESSIONAL*. It's your 1989 annual renewal form, and it's very important. Let me explain.

Once each year, we must ask all of you to complete and return a qualification form. Even though *HP PROFESSIONAL* is free, once each year we need a completely new card with every question answered. Our advertisers pay for the magazine, and they demand up-to-date information. In addition we can deliver you a better-targeted magazine when our demographic information is fully current.

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CIRCLE 170 ON READER CARD

LETTERS

Address letters to the editor to the *HP PROFESSIONAL* magazine, P.O. Box 445, Spring House, PA 19477-0445. Letters should include the writer's full name, address and daytime telephone number. Letters may be edited for purposes of clarity or space.

A quick note in support of Don Person's review of the HP DeskJet printer, which appeared in the July 1988 issue. I have two of these printers currently installed in my company and will acquire a third within the week. We are very satisfied with these printers. The print quality is excellent, as noted in Mr. Person's review. While you might see some bleeding under a magnifying glass on some porous papers, I have yet to encounter enough bleeding to be a noticeable problem. In fact, I have had typewriters (yes, I have one, too) with much poorer print quality than I get with my DeskJet. In my opinion, the print quality is more on the order of 95 percent of the print quality we get from the LaserJetII we have on our desktop publishing system.

Another good point for the DeskJet: It does envelopes. In fact, it does single envelopes very well. Envelopes must be fed one at a time, so it does limit the speed with which envelopes can be done. For large numbers of envelopes, I would stick to mailing labels. However, for most correspondence, having the DeskJet has made my life much easier because I can do both the letter and the envelope without leaving my desk. Our LaserJet does not feed envelopes well at all. We have made a rule, in fact, that we do not do envelopes on the LaserJet.

The ink cartridge may not last quite as long as anticipated, though. I have had my DeskJet for approximately six weeks, and already have put in my second ink cartridge. In that period I produced somewhere between 500 and 600 pages, most done in letter quality print. The cartridges are quite easy to replace, by the way. Just snap the old one out, snap the new one in, prime and resume printing.

I echo Mr. Person's feeling that the DeskJet is quite possibly the best printer that HP has ever come out with. I believe it may be one of the best printer values to come along yet from any manufacturer.

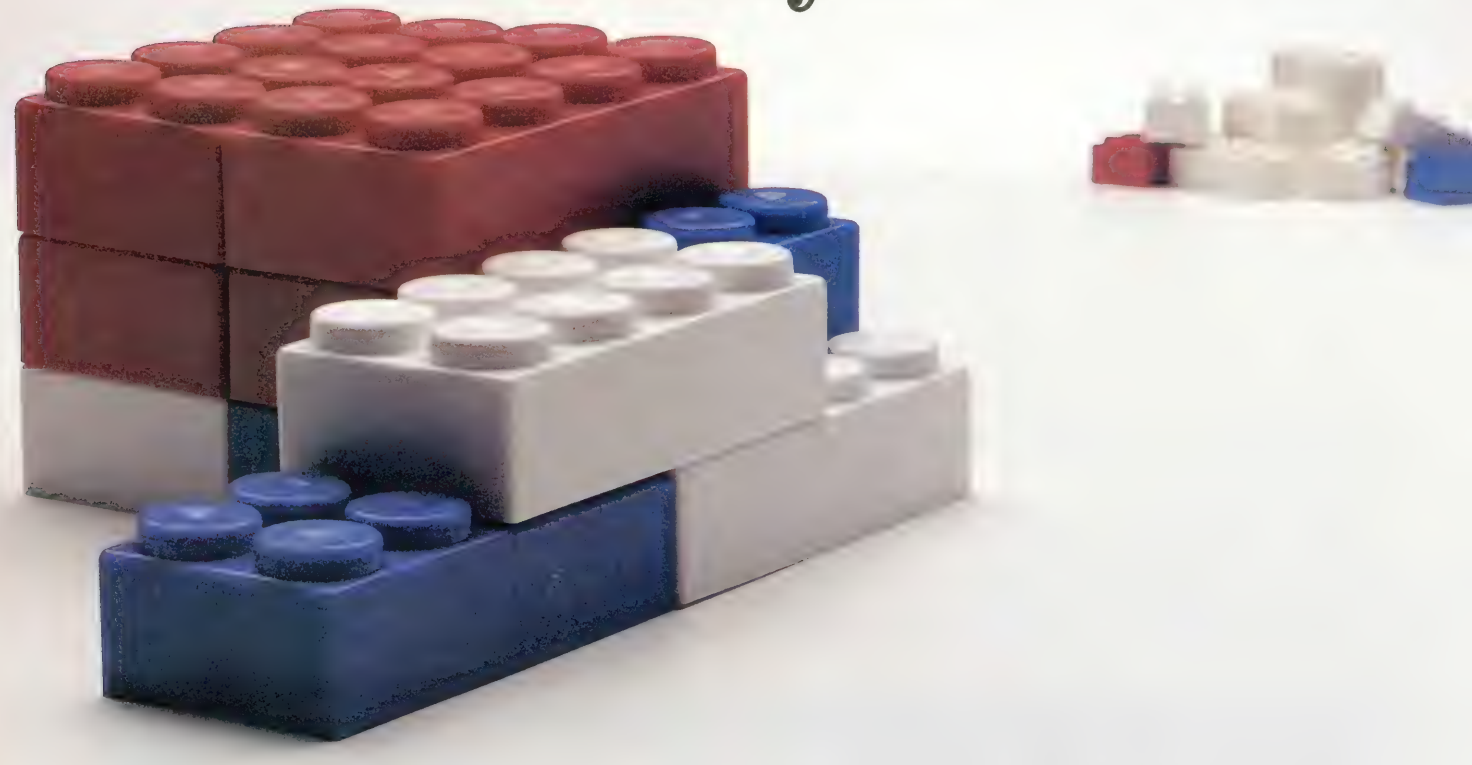
Sincerely,

David Ray Fuller
Information Systems Manager
Calmark Hospitality Systems

Correction: *The program shown below was omitted from Bob Youngquist's article "Putting PCL To Work," which appeared in the October issue of* HP Professional. *This program is referred to in the article as Program 1. We apologize for the omission.*

```
/* ******************* matrix.c ********************** */

     #define GotoXY      "1.1.13&a%dc%dR" /* cursor positioning
*/
     #define LandScape   "1.1.23&l1O"     /* page orientation
*/             #define ClearMarg   "1.1.339"        /* clear
margins      */
     #define ResetPrn    "1.1.43E"        /* reset printer
*/
     #define LinePrnFont "1.1.53(s16.66H" /* select font
*/
     #define PageEject   "\f"           /* form feed          */
     #define MaxLines    60             /* max lines per page */
     #define MaxColumns  130            /* max columns "    " */
     #define ColumnIncr  5              /* column spacing     */

     main()

     {
      int x,   /* cursor x position */
          y;   /* cursor y position  */

      /* select page orientation, clear margins, choose font */

      printf(LandScape);
      printf(ClearMarg);
      printf(LinePrnFont);

     /* print a matrix of cursor positions on the page */

      for (y = 0; y < MaxLines; y++)
         for (x = 0; x < MaxColumns; x += ColumnIncr)
            {
             printf(GotoXY, x, y);
             printf("%d", (x == 0) ? y : x);
            }

     /* eject the page and reset the printer to default values */

     printf(PageEject);
     printf(ResetPrn);
     }                    /* end of main */
```

Customize your own information center facility . . .



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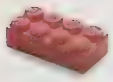
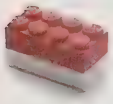


FOUNDATION: The core module of the DataExpressSeries links end users to their data on the HP3000. It accesses IMAGE™, KSAM, MPE and SD files to select, compute, sort, reformat and download data to PC applications.



STRUCTURE: The DataExpressSeries has a common menu and catalog structure. Full function key support provides even easier end user access to data. With Reflection™, downloads are automatic.

BUILDING: PowerHouse, Dictionary, RELATE and Omnidex Interfaces are available for enhanced access to your data. The DataCatalog option allows "views" of complex data structures to be defined for end users and security to be defined at the field value. The PrintLocal option gives end users access to their spooled output on their local printers.

In short, the DataExpressSeries is a simple, powerful information center solution to meet your needs and budget today. Since you can add options and interfaces at any time, it provides a clear growth path to solving all your HP3000 data interchange needs in the future.

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CIRCLE 134 ON READER CARD

INDUSTRY WATCH

Ann Marie Lasak

Announcement Kicks Off 1988 Technical VAB Conference

HP Makes Changes To Corporate VAB Program

An announcement of changes to HP's corporate Value-Added Business (VAB) program kicked off the Technical VAB Conference held September 27-30 in Monterey, CA. It is no secret that HP Value-Added Businesses (VABs) play a major role in HP's total computer-business strategy. HP relies on VABs to complement and enhance its product offerings for specific industry applications with the addition of specialized software or hardware enhancements.

Since the 70s, HP has depended, to a large extent, on other businesses to provide the specialized understanding needed to penetrate specific markets successfully. Because the role of VABs is to add the critical missing value required by each market, the term Value-Added Business was chosen to describe them. HP depends on VABs to augment its own solutions by adding the software, hardware, expertise and services to solve the problems of specific groups of customers. Even John Young has been quoted as saying, "We are going outside the company more for a wider variety of expertise."

Changes To The VAB Program

HP's changes to the VAB program focus on changes in its compensation structure for software suppliers and in its discounts and marketing and sales assistance for Value-Added Resellers (VARs) and Original Equipment Manufacturers (OEMs). The changes involve increased compensation for software suppliers and an opportunity for OEMs and VARs to select between two VAB status categories.

Another interesting and much needed change to the VAB program discount structure involves a move toward local currencies and away from the archaic system of functional units when determining discounts for multinational VABs.

Software suppliers now will receive up to an additional 4 percent compensation when their software leverages the sale of HP 3000/9000/1000 computer systems or upgrades. HP's software suppliers can receive a maximum of 10 percent compensation. These changes

[THE BASICS: OEMs, VARs, SOFTWARE SUPPLIERS, SYSTEM INTEGRATORS]

OEMs — OEMs buy HP products, add significant value to them and sell these products under their own name. OEMs frequently add hardware as well as software and are responsible for the integration of all components of their systems. The HP products and the HP name may or may not be visible to the end user in an OEM solution.

HP-direct sales reps do not get involved with an OEM's sales processes because OEMs normally focus on opportunities outside of HP's target markets. HP can provide installation and hardware and software maintenance services if the OEM or end-user customer desires.

VARs — VARs buy HP systems, and, like OEMs, add significant product value. The main value added by VARs, usually, is software. VAR's solutions frequently are turn-key and focus on the same vertical markets as HP. The HP content in their products usually is visible to the end-user customer.

VARs typically take primary responsibility for the sale to the end-user customer. HP-direct sales reps, however, are compensated whenever a VAR makes a sale in their territory, Therefore, they have an incentive to assist as needed.

Software Suppliers — Software suppliers market, sell and support their own products, which in turn help leverage HP computer sales. Software suppliers develop, market and support their own software or software they have licensed from other developers. HP sells and supports the computer system and the software supplier sells and supports the application software.

Since HP direct sales reps are compensated for the sale of the computer system, they have an incentive to work with software suppliers to close sales.

Software suppliers often are qualified to purchase discounted demonstration/development systems and receive compensation for leveraging sales of HP products.

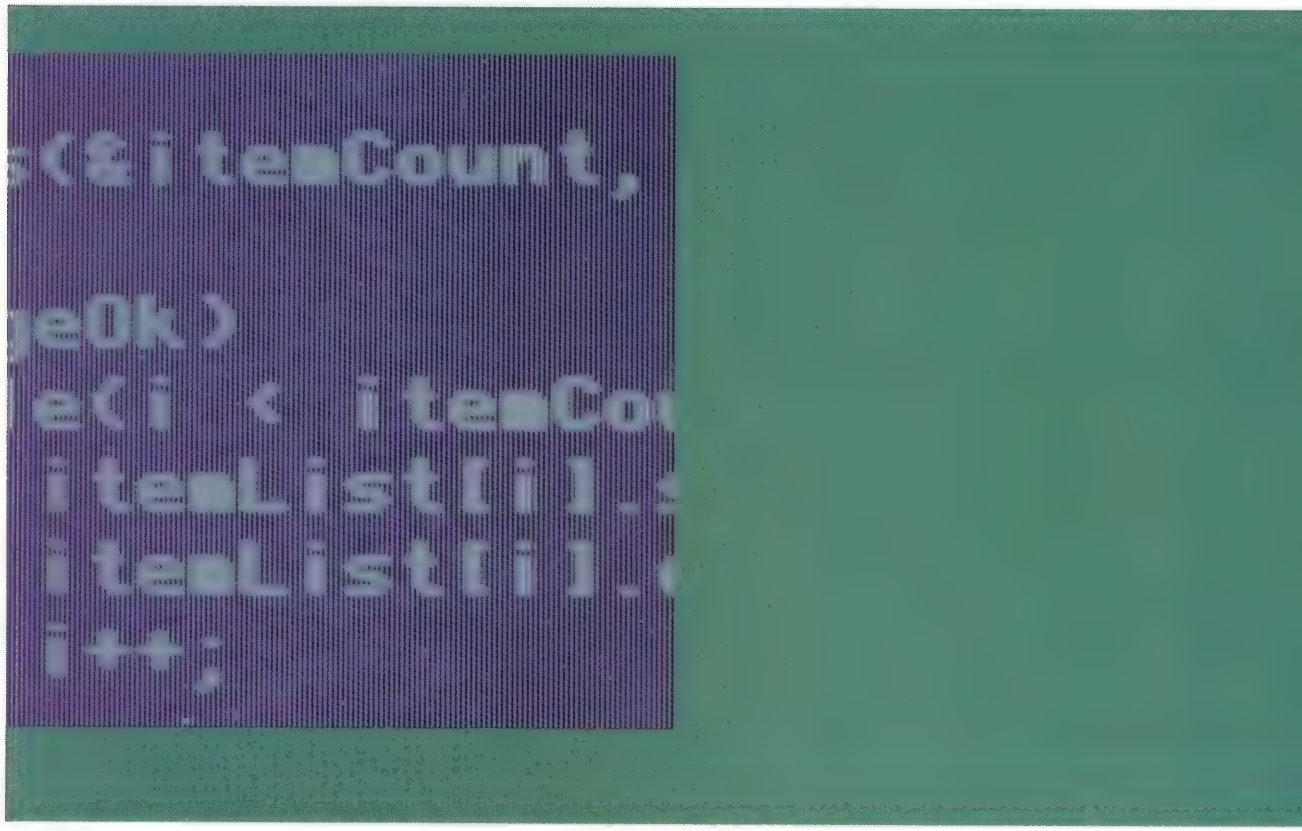
System Integrators — Systems integrators supply custom solutions, which are designed for specific projects. Their added value may be software, hardware and/or integration and project-management services.

System integrators may act as a VAR, project OEM, software supplier or integrating agent.

HP-direct sales reps are compensated and, therefore, are motivated to participate in the sales process.

HP frequently teams with a systems integrator to pursue a specific business opportunity. Both parties are involved in the sales process.

The Consumer's Guide to Buying a C Compiler for the HP 3000.



The release of Spectrum has sparked new interest in C among HP 3000 users. If you're adding a C compiler to your software shopping list, here are four criteria to consider.

- Is the compiler strictly ANSI-standard, ensuring the ability to run programs on both classic and Spectrum HP 3000s?
- Does it generate efficient, highly-optimized code?
- Does it work like all other HP 3000 compilers, providing accesses to the MPE file system and intrinsics and producing standard USL files?
- Does it provide a reliable programming environment through function prototyping?

There are four things you should know about C/3000,™ the C language compiler from Tymlabs. Yes, yes, yes, and yes.

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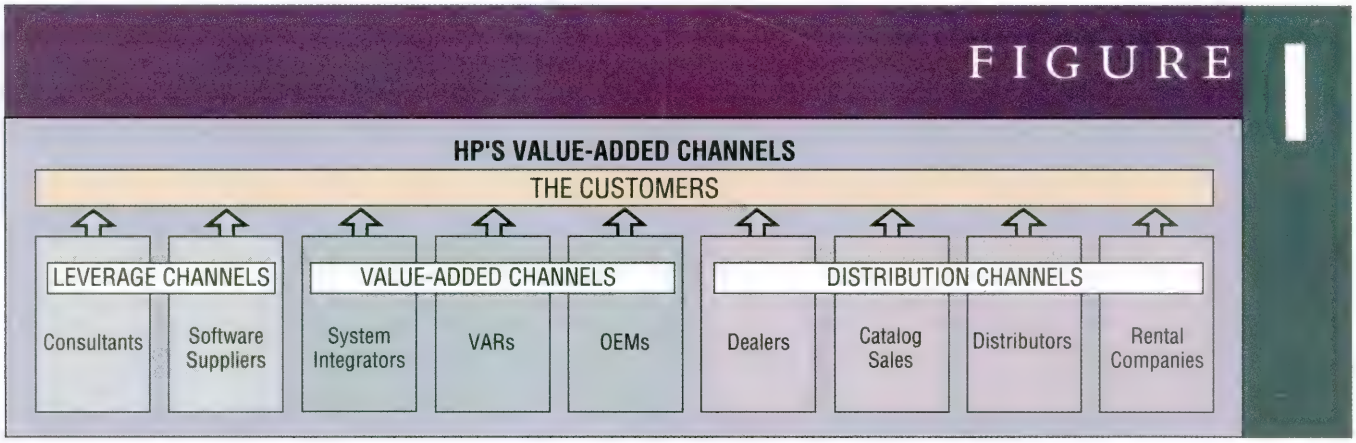

became effective as of 10/3/88.

HP OEMs and VARs that sell HP 1000 and HP 9000 computers now can select their status. (The HP 3000 VAB community does not include OEMs; therefore, they are not required to select a VAB status.) If they select the OEM status, qualifying OEMs can receive a discount 3 percent greater than VARs for HP systems sales. If they choose the VAR status, they'll be eligible to receive added marketing and sales assistance from HP.

The status changes are designed to make a clear distinction between an OEM and a VAR. "Our OEMs prefer maximum hardware and software discounts instead of additional marketing or sales assistance from HP," said William P. Hilliard, worldwide director of HP corporate value-added channels. "VARs, on the other hand, want a tighter working relationship with HP, and we provide that in the form of marketing and sales assistance."

HP feels confident that these changes will improve the VAB/HP working relationship The representatives from HP's VAB program attending the conference seemed to agree that these changes were for the better. ■

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"to think of; frame in the mind; conceive ... create out of separate elements ... assume shape."

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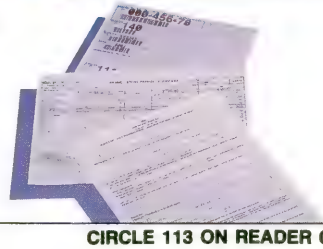

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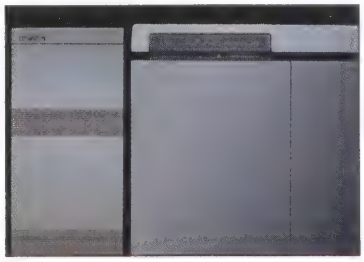
CIRCLE 113 ON READER CARD

Introducing FALCON XP: The only disc subsystem with 64K of write cache.

Lightning strikes twice! EMC has taken the fastest disc subsystem for your HP 3000 and made it even faster. In recent independent benchmark testing the Falcon, without write cache, won the race over HP's Eagle drives. Now we've added 64K of non-volatile write cache to the controller to bring you the FALCON XP, a lightning-quick solution to your I/O bottlenecks.

Now with twice the read cache and 16 times the write cache available from HP, the FALCON XP can address any size read or write. This means you'll get even faster system response time — **up to 7-20% faster than any drive offerings to date!** And, with the FALCON XP you can still take advantage of EMC's other features like our proprietary caching algorithm, which allows you to tune cache domains to fit your application and guarantee maximum performance.

Call today to find out how the FALCON XP can cut through your I/O bottlenecks. It's a winning decision! For more information, contact your local EMC representative or call: **1-800-222-EMC2 X2290.** (In Mass., 617-435-1000.)



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Falcon and Falcon XP are trademarks of EMC Corporation.

CIRCLE 136 ON READER CARD

HP Announces Corporate Reorganization

Tightens Ties Between Commercial And Technical Sectors

Hewlett-Packard recently realigned portions of its computer business to provide simplified reporting relationships and tighter links to its sales and distribution channels.

The company's three principal computer-product sectors have been reduced to two, while a fourth sector devoted primarily to computer marketing and worldwide sales and support remains largely unchanged. The company's fifth sector, which houses HP's instrumentation and measurement systems businesses, also is unchanged.

The two new sectors are the Computer Products Sector and the Networked Systems Sector.

The Computer Products Sector will concentrate on those businesses whose products often are sold as personal solutions by the HP sales force or through computer dealers and distributors. Lewis Platt, HP executive vice president, will head this sector, which includes personal computers, workstations, peripheral products, computer terminals, handheld calculators and engineering applications.

The Networked Systems Sector is responsible for those businesses that have primarily a multiuser or systems orientation and whose products are sold primarily through HP's direct sales force. Douglas C. Chance, HP executive vice president, will head this sector, which includes office products and other information systems, multiuser computer systems, information networks, manufacturing applications and computer manufacturing and planning.

A new U.S. computer marketing center, designed to provide a closer coupling between HP's product divisions and its sales and support organizations, also has been established as part of this sector.

The two new sectors and the Marketing and International Sector, headed by Richard Alberding, HP executive vice president, report to Dean O. Morton, HP executive vice president and chief operating officer. Morton was named to direct HP's computer activities in August.

Four groups based in HP's former Systems Technology Center (STS) — the peripherals group, Information Networks Group, Networked Systems Group and the Computer Manufacturing and Planning Group — have been folded into the two new sectors. A fifth group, the Information Architecture Group, has been established as a separate entity reporting to Morton.

John L. Doyle, HP executive vice president and former head of STS, has been named executive vice president for business development. He will oversee four corporate departments responsible for development, engineering, manufacturing and quality. His charter will include the development of alliances and business partnerships that support the company's long-term growth objectives.

HP's one-millionth terminal is packaged at HP's Roseville Terminals Division.

HP Ships One-Millionth Terminal

Now Needs 92 Percent Less Time To Build

Hewlett-Packard recently shipped its one-millionth display terminal to 3M (St. Paul, MN).

Fourteen years ago, HP shipped its first terminal, the HP 2640, for a U.S. list price of $3,000. One million terminals later, HP is shipping terminals priced from $375 that use 95 percent fewer final assembly parts and take 92 percent less time to build.

In 1987, with the introduction of the HP 700 terminal line, HP, for the first time added terminals for the IBM, DEC and general-purpose ASCII markets.

PC Industry Bands Together

Announces Extended Industry Standard Architecture (EISA)

Recently, a group of companies in the personal computer industry announced Extended Industry Standard Architecture (EISA), an advance and extension to the existing PC Industry Standard Architecture (ISA). EISA will enable manufacturers to deliver high-performance capabilities to PC users in the future while maintaining full compatibility with the installed base of industry-standard PCs.

PC manufacturers AST Research Inc., Compaq Computer Corporation, Epson America Inc., Hewlett-Packard, NEC Information Systems Inc., Ing. C. Olivetti & Co., Tandy Corporation, WYSE Technology and Zenith Data Systems recently endorsed EISA at a joint press conference in New York.

EISA specifies a new 32-bit bus for Intel 386-based industry-standard PCs and those based on future higher-performance members of the 80386 product family. Because EISA is a superset of the existing standard, it allows personal computer users to preserve and build on their investments in industry-standard hardware, software, peripherals and training. Customers will be able to use all of their existing software and peripherals in EISA products as well as utilize new peripherals and software designed specifically to take advantage of EISA's new capabilities.

EISA is an enhancement to the existing Industry Standard Architecture, which consists of three key components: microprocessors (such as the Intel 80386), operating systems (such as MS-DOS) and the input/output (I/O) bus or expansion slots.

The higher-performance Intel 80386 microprocessor and more powerful new operating systems are expected to drive PCs into new, more demanding user applications, thus increasing the need to extend the current ISA I/O bus to full 32-bit capability in the future. EISA is designed to fill this need with an open, fully compatible, 32-bit architecture platform that will support emerging work-group applications such as local-area networks, communication gateways, database access by multiple users and transaction processing.

EISA delivers full-function 32-bit address and data bus extensions that support memory capability beyond today's 16 MB maximum. Also it provides both 32-bit direct memory access and 32-bit bus master support.

Additional features include programmable board setup for auto configuration of EISA boards and software-aided configuration of switch-programmable existing ISA and future EISA boards.

Carleton Technologies Receives Referenced Status

WORKWARE Qualifies As Reference Product

Carleton Technologies Inc., (Ottawa, Ontario) a Canadian software company has received Referenced Status, the HP Plus designation. Hewlett-Packard reviewed CTI's WORKWARE 3000, an interactively integrated computer manufacturing solution, at six of its installation sites and qualified WORKWARE as a Referenced product.

WORKWARE 3000, designed and developed by CTI, primarily focuses on the manufacturing sector and exclusively operates on Hewlett-Packard hardware.

Contact Carleton Technologies Inc., 1 Caesar Avenue, Nepean, Ontario K2G 0A8; (613) 225-0283.

Circle 400 on reader card

MCBA Software Now Runs On HP-PA

Enhanced To Support Laser Printers And Low Cost Terminals

MCBA INC. has announced that its accounting, distribution and manufacturing software for HP 3000 computers now runs on the HP 3000 Series 900 systems in native mode under the MPE/XL operating system.

Until now, MCBA packages have run under the MPE/V operating system and in compatibility mode under MPE/XL. Similar performance gains can be realized by upgrading from a standard HP 3000 model to a Precision Architecture system.

The new MCBA packages include several enhancements such as support for laser printers and "environment files" (escape sequences containing printer instructions). The packages also support HP's 700 Series of terminals, as well as some non-HP terminals. The user now can display spooled reports on the terminal. In addition, MCBA's Accounts Payable and Accounts Receivable packages now feature a file locking procedure.

MCBA will market only one version of its source code for all HP 3000 machines. Companies who install MCBA's packages on a standard HP 3000 can later upgrade to a Series 900 system and simply run the MCBA software by recompiling. Existing MCBA users may obtain updates that will allow their current software to transfer directly to a Series 900.

Contact MCBA, 425 West Broadway, Glendale, CA 91204-1269; (818) 242-9600.

Circle 393 on reader card

Support For HP NewWave Environment

Five Microsoft Windows Developers Offer Programs

Hewlett-Packard has announced that five Microsoft Windows software developers have said they plan to offer programs that will operate with the HP NewWave environment.

In addition, the software companies said they are evaluating whether to modify their programs to take full advantage of the HP NewWave technology.

HP NewWave is a software applications environment for MS-DOS PCs. It lets users move between applications to create documents made from different types of data, including text, graphics, spreadsheets and voice. The HP NewWave object-management technology also allows related files from different applications to be updated automatically.

The environment also includes "agents" which can be "taught" to perform routine tasks such as preparing a sales report. Agent tasks can be done according to a prearranged schedule, when triggered by a specific event, or at the user's command.

HP now is shipping the HP NewWave Developer Kit to software developers interested in writing or modifying their applications to work with the new environment. Because HP NewWave is based on Microsoft Windows 2.03, applications already developed for Windows need only minimal modification to operate with HP NewWave.

The software companies planning to offer products that support HP NewWave include Da Vinci Systems, which offers eMail; Financial Feasibilities Inc., which offers CFO Advisor; Future Soft Engineering Inc., which offers DynaComm; Geovision Inc., which offers Geovision mapping and Polaris Software, which offers PackRat.

Earlier, HP and Microsoft announced that they plan to work together to develop and market a version of the Microsoft Excel Spreadsheet program for HP NewWave.

At a recent Microsoft Windows Developer Conference in Los Angeles, HP demonstrated eight other applications that were integrated into HP NewWave. Developers of those programs and others said they are evaluating whether to offer an HP NewWave version of their programs.

Informix Announces Plans

To Offer Object-Oriented And Distributed DBMS Products

Informix Software Inc., a supplier of DBMS software for the UNIX operating environment, recently announced plans for incorporating both object-oriented and distributed features in its SQL-based DBMS product line.

The Informix DBMS engine will be the foundation for an integrated product line that incorporates both office automation and database technology for the UNIX environment.

Object-oriented features will change the way users store and retrieve database information. Informix's object-oriented DBMS engine will enable users to store any type of file, such as a spreadsheet, facsimile, digitizing image or word processing document in a database, through the support of binary large objects.

Informix's new DBMS engine also will enable users to specify a character field of any length, eliminating the restrictions of fixed-length fields.

To retrieve these new information types being stored in the database, Informix will extend SQL with free-text search technology. Using free-text search, users will be able to query for a name, a dollar amount, a phrase or any relationship between those characteristics.

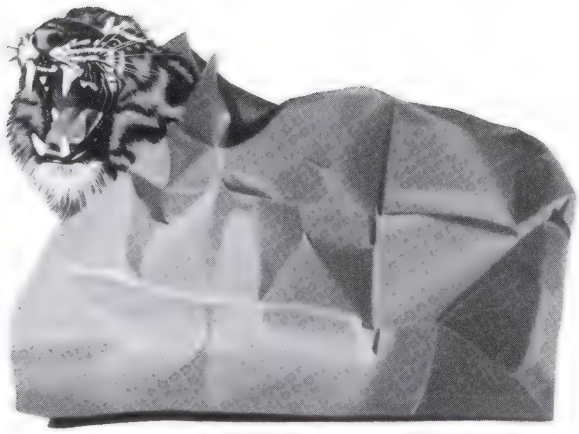
Distributed DBMS capabilities also will be provided with the object-oriented database engine. Informix plans to introduce a high-performance DBMS engine during the first half of 1989.

The distributed features include support for multisite reads, single-site updates and location transparency, which enables both users and application programs to access data without knowing where it's stored. The engine also will offer multiuser concurrency controls to ensure data integrity and security and network optimization capabilities to maximize performance.

A later Informix DBMS engine release will provide support for multisite updates including a two-phase commit protocol and a number of ways to structure database tables in order to reduce network traffic and provide optimum system efficiency.

Contact Informix Software Inc., 4100 Bohannon Drive, Menlo Park, CA 94025; (415) 322-4100.

Circle 394 on reader card



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CIRCLE 156 ON READER CARD

DBS Signs Distribution Agreement

Announces GUS For MiniWord

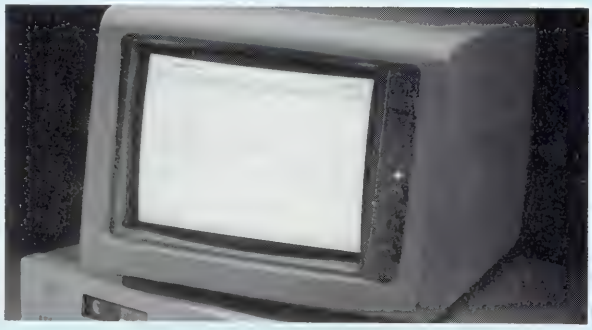
Data Based Systems Inc., has announced that it has signed a world-wide distribution agreement with Comprehensive Systems Inc. for a modified version of GUS, its user reportwriter for use with MiniWord word processing. Available for the HP 3000 MPE/XL systems, GUS can select data items from multiple Image databases, KSAM and MPE files.

Users can select data items from a displayed list for merging into a document. No knowledge of the file structures or a programming language is necessary. The user can perform calculations, create new fields, reformat the field, sort and perform complex record selections. With GUS, the user enters a selection number, presses a function key, or occasionally enters constants to complete the request.

GUS is selected off the application menu of Access for a seamless integration with MiniWord. The user executes the requests interactively and can save the report definition for use at another time. All extractions first can be previewed at the terminal before saving to a MiniWord Document File. The user then can choose option #6 — list processing — to complete printing. Optional items also can be selected, and if there is no value for the field, MiniWord will remove the blank line when it is printed (example: a four line address with only three lines).

Contact Data Based Systems Inc., 31 Highway 12, Flemington, NJ 08822; (201) 782-8811.

Circle 392 on reader card



An upgrade to PC Workbench increases speed 2.5X.

Analog Announces Upgrade

Workbench's Speed Increases

Analog Design Tools has announced an upgrade to PC Workbench that increases Workbench's speed more than two-and-a-half times. The new version of PC Workbench, used for the design and simulation of analog circuits, includes a high-speed 32332 accelerator board from Opus. Previous versions of PC Workbench no longer will be offered.

PC Workbench for 286-based machines includes the Opus 32332 board, mouse, documentation and the basic software package consisting of: circuit editor, SPICE PLUS, DC multimeter, time and frequency domain test setups, sample device library, spectrum analyzer and parameter entry with subcircuit capability. Available options include a parametric plotting module, a statistical analysis module, a 50-member basic device library of more than 1,800 components, the power design module and smoke alarm, Analog's stress analysis program.

The new PC Workbench is listed at $10,500. Current users of PC Workbench can purchase an upgrade to the new version for $4,500.

Contact Analog Design Tools, 1080 East Arques Avenue, Sunnyvale, CA 94086; (408) 737-7300.

Circle 395 on reader card

HP Begins Shipping 9000 Model 370

Prices Range From $21,900 To $72,250

Hewlett-Packard recently announced that it has introduced and begun volume shipments of the HP 9000 Model 370, based on the Motorola 33-MHz MC68030 processor.

The Model 370 (ranging in price from $21,900—$72,200) offers 8 MIPS performance and is compatible with the software available for the HP 9000 Series 300 32 bit workstations.

All Model 370 workstations include a 32 bit system bus, the IEEE 488 peripheral interface, direct memory access (DMA), and Ethernet/IEEE 802.3 ThinLan or attachment unit interface (AUI) for network access. Standard configuration includes 8 MB of parity RAM, which can be expanded to 32 MB (48 MB for ECC RAM).

HP's HP-UX 6.2 includes licenses for C, NS-ARPA, NFS and the X-Window system. Other options for functional enhancement include VME bus expansion, SCSI disc interface and DOS co-processing.

Users of the HP 9000 Model 350 can upgrade to the Model 370 with a single-board kit ($5,000).

HP also bundled the C+ graphics subsystem on the Model 360 and 370. In addition, HP introduced a new floating-point accelerator (FPA) for its Series 300 workstations. Benchmarked at 730 double-precision KFlops on a Model 370, the new FPA offers improved performance on floating-point math-intensive applications and is list priced at $3,500.

Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.

Circle 398 on reader card

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CIRCLE 200 ON READER CARD

LaserKey Unleashes Laser Printer Potential

Arkwright Inc., recently introduced LaserKey, which enables PC users to maximize the performance and productivity of its printer through the efficient production of overhead transparency presentations, labels, lettering decals, notices and memos.

LaserKey provides 19 page formats. Layout options include automatic bulletizing, underlining, left and/or right justification and automatic numeral line-up.

LaserKey is available for use with IBM PC, XT, AT, PS/2, or IBM-compatible PCs, and Hewlett-Packard LaserJet II, or PostScript-based or compatible laser printers. The new software can be used with IBM PC-DOS or MicroSoft MS-DOS.

Ready for immediate use, the LaserKey package ($99.95) contains 5¼-inch and 3½-inch diskettes, 10 sheets each of clear and blue- and yellow-tinted overhead transparency film, 15 sheets of assorted label formats and three sheets of translucent stick-on lettering file.

LaserKey also provides free-form window templates. Frequently used data easily is duplicated with the touch of a key, eliminating the need for rekeying in information and reducing typographical errors. Layouts are provided for three different sizes of labels. Applications include shipping, mailing, filing, computer diskette, containers and name tags. Stick-on lettering/decal film allows quick production of signage and oversized labels (up to 8½-inch by 11-inch).

LaserKey offers production of labels, lettering decals, memos and more.

Contact Arkwright Inc., Dept. P, 538 Main Street, Fiskeville, RI 02823; (800) 942-5900.

Circle 386 on reader card

CSPI Expands Its Mini-MAP Series

CSPI, a manufacturer of array processors, announced the availability of its new Mini-MAP HXL, an array processor for use exclusively with Hewlett-Packard's 9000 Series computers.

The Mini-MAP HXL offers 38 to 280 MFLOPS of compute power and is particularly well suited to the requirements of Hewlett-Packard's 9000 Series Model-350 graphics workstation. It offers a speed increase by a factor of more than 20, of those algorithms required for image processing work, such as 2-D FFTs and other vector and matrix calculations. Mini-MAP HXL is available to HP customers from CSPI under the HP PLUS Cooperative Marketing Program.

A new, illustrated 6-page brochure describing Mini-MAP HXL, presenting applications, hardware and software features and complete specifications, is offered free upon request.

Contact CSPI, 40 Linnell Circle, Billerica, MA 01821; (617) 272-6020.

Circle 367 on reader card

HP Announces Support For Color Peripherals

Hewlett-Packard has announced a software driver that enables the HP PaintJet color-graphics printer to work with the new release of Microsoft Windows/286 2.1. In addition, the Microsoft Windows driver for all HP plotters has been upgraded.

Users of the HP PaintJet color-graphics printer can create merged text and color-graphics documents on paper or transparencies. With the new driver, users can work with packages in Microsoft Excel, Aldus PageMaker and Micrografx Designer.

The new color-graphics printer produces vivid overhead transparencies and

reports and high-speed, near-letter-quality (NLQ) text.

With Microsoft Windows, the HP PaintJet color-graphics printer prints thousands of colors, restricted only by the capabilities of the graphics-application package used with the driver. Users can specify foreground and background color in such monochrome applications as Microsoft WindowsPaint.

The driver supports bit-mapped printer fonts that match the windows-screen fonts and provides true WYSIWYG output. HP also announced a bit-mapped font product called "HP PaintJet Soft Fonts for Microsoft Windows."

The software driver for Microsoft Windows/286 2.1 works with Microsoft Windows 2.03, Microsoft Windows/386 2.03 and HP Vectra Windows 2.0. Microsoft Windows 2.03 will run with systems that have DOS 3.0 or higher, 512 KB of memory and an enhanced graphics-adapter card.

A new HP plotter driver is included in Microsoft Windows 2.1. This driver supports all HP plotters. The improved plotter driver supports multiple-pen carousels, which means users can customize up to six carousels for color and pen types. It eliminates the need to reset the pen features of a single carousel and adds additional features.

Microsoft Windows 286 2.1 ($99), includes the new HP PaintJet color-graphics-printer driver and the enhanced plotter driver. Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.

Circle 369 on reader card

LaserJet IID Joins HP Family

Hewlett-Packard has introduced the newest member of the HP LaserJet printer family: the HP LaserJet IID printer.

The new printer complements the HP LaserJet Series II printer by providing twice the paper capacity (400 sheets), two paper trays, duplex (two-sided) printing and a new accessory for automatic printing of up to 50 envelopes. Each HP LaserJet IID printer also comes with 24 fonts.

HP LaserJet IID printer users can set up the duplex-printed page for different binding options by using the front-control panel or supporting software. Pages can be printed for binding on the left edge to read like a book, or at the top to read like a calendar.

The optional automatic-envelope feeder serves as a third-input source to the printer without replacing one of the paper trays. The printer can pull paper consecutively from both trays and the envelope feeder, providing presorted, ready-to-mail documents.

LaserJet IID joins HP family, providing twice the paper capacity.

Customers can use letterhead and plain paper in the two paper trays or two different sizes of paper trays in the printer at the same time. Two 200-sheet letter (8½ x 11 inch) paper trays come standard with the printer. Optional trays hold legal- (8½ x 14 inch), executive- (7½ x 10½ inch) or A4 European- (210 x 297 mm.) sized paper.

Twenty-four fonts come with the HP LaserJet IID printer. Fourteen fonts are internal to the printer and come on the HP 92290S2 font cartridge that is shipped with each printer. All existing HP LaserJet printer font cartridges and soft fonts work with the new printer. Like the HP LaserJet 2000 printer, the HP LaserJet IID printer can rotate any font to print in either portrait (vertical) or landscape (horizontal) orientation.

The HP LaserJet IID printer comes with 640 KB of standard memory. The user can add on 1-, 2- or 4-MB memory boards to expand memory.

The HP LaserJet IID printer ($4,295) has a one-year warranty and is available immediately.

Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.

Circle 382 on reader card

HP-41 Programs And Data Now On The PC

The ELI-IL is a software package designed to upload/download HP-41 (calculator) programs and data to/from the PC. The PC then may be used as an HP-41 printer and mass storage system, Also, programs and data may be transferred between the HP-41 and ELI-41/41SX.

ELI-IL serves as a medium to store programs and data while using the PC screen to monitor calculations and have access to the PC's printer for hard-copy printout. The result also can be redirected to an ASCII text file for later processing by a text editor.

ELI-IL also enables you to upload/download programs and data between the HP-41 and ELI-41SX calculator software. Contact Eclipse Logic Inc., 1815 N.W. 169th Place, Suite 5040, Beaverton, OR 97006; (503) 629-0917.

Circle 371 on reader card

CCS/SCREEN Now Available On HP 3000

Corporate Computer Systems has announced the release of CCS/SCREEN, a dictionary driven WYSIWYG (What You See Is What You Get) forms management package for the

classic HP 3000 Series computer.

CCS/SCREEN is a block forms management system designed to increase programmer productivity and application portability. Available on a range of HP computers and operating systems, CCS/SCREEN's WYSIWYG data-dictionary oriented technology does away with form definition languages and form layout sheets. CCS/SCREEN allows the programmer to design, debug and maintain forms interactively through all HP block mode terminals and IBM PCs and PC clones. The position of the data on the screen completely is uncoupled from the program than manipulates the data, so changes to forms need not change the programs that use the forms.

Contact Corporate Computer Systems Inc., 33 West Main Street, Holmdel, NJ 07733; (201) 946-7167.

Circle 385 on reader card

WordWise 300 Supports HT-BASIC

WordWise 300 now supports TransEra Corporation's recently released HT-BASIC software package, which emulates HP's Rocky Mountain Basic on the HP Vectra and other IBM-PC compatibles.

WordWise 300 includes features such as support for Greek and math characters, a built-in terminal emulator for text file transfer, the ability to mix text and graphics, a spell-checking dictionary and a mail-merge database. Two-column printing and macro keys also are supported.

Users who have a copy of TransEra's HT-BASIC may purchase WordWise 300 for $495. The word processor includes a manual as well as a keyboard overlay that redefines the user's AT-style keyboard with the word processing functions.

For PC-compatible users who do not have HT-BASIC, James Associates offers the combined package of HT-BASIC and WordWise 300 for $895.

Contact James Associates, 1525 East County Road 58, Ft. Collins, CO 80524; (303) 484-5296.

Circle 370 on reader card

Drafting Plotter Line Enhanced By HP

Hewlett-Packard recently announced two new drafting plotters, the E-sized HP DraftPro EXL and D-sized HP DraftPro DXL plotters.

HP designed both plotters for the PC computer-aided design (PC-CAD) market. In addition, HP reduced the prices of its HP DraftMaster I/II plotters up to 14 percent.

The HP DraftPro EXL plotter draws on media in sizes from A (8½ by 11 in.) through E (34 by 44 in.) and is priced less than $6,500. The HP DraftPro DXL plotter offers A- through D- (22 by 34 in.) size plotting for less than $5,000.

The new HP DraftPro DXL and EXL plotters run with PCs such as the IBM PC and compatibles, HP Vectra PC and Apple Macintosh. All HP drafting plotters work with leading PC and engineering workstation-based CAD systems.

The new products feature .0005-inch mechanical resolution, .2 percent accuracy and 2g pen acceleration. An eight-pen carousel automatically caps the liquid-ink or fiber-tip pens and prevents them from drying. The pens are available in several hues and line widths. Both plotters have optional upgrades of 1- and 2-MB memory buffers.

Hewlett-Packard graphics language (HP-GL) compatibility allows HP DraftPro EXL and DXL plotters to use the same software as they do with other HP pen plotters. An RS-232-C serial interface is standard.

The HP DraftPro EXL and DXL are backed by a one-year, on-site parts-and-labor warranty. The DraftPro EXL and DXL are available immediately and are $6,495 and $4,995 respectively.

Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.

Circle 388 on reader card

Programmer Starter Kit Introduced

Hewlett-Packard has introduced a programmer starter kit (HP 08770-60064) that interactively simulates seven of the most common disc test waveforms used in industry testing. Most of these waveforms are based on ANSI Standard X3B7 1985-44 for disc certifiers.

The programs run on the HP 8770A arbitrary waveform synthesizer, with dc to 50 MHz simulation capability. The program uses the HP 11776A waveform generation software.

Central to the proper design of this circuitry is the ability to simulate not only the intended high-performance signals into the read/write and servo channels, but also the ability to add in precise amounts of noise, wobble, peak-shift modulation, missing and added bits, as well as differentiator and servo-rest waveforms. These form signal-stress conditions that check for margins or performance on the functional blocks.

Prices for Model 08770-60064 programmer starter kit, HP 8770A AWS and HP 11776A waveform-generation language are $75, $25,000 and $6,500 respectively.

Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.

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Continued on page 86.

HP announced two new drafting plotters: DraftPro EXL and DXL.

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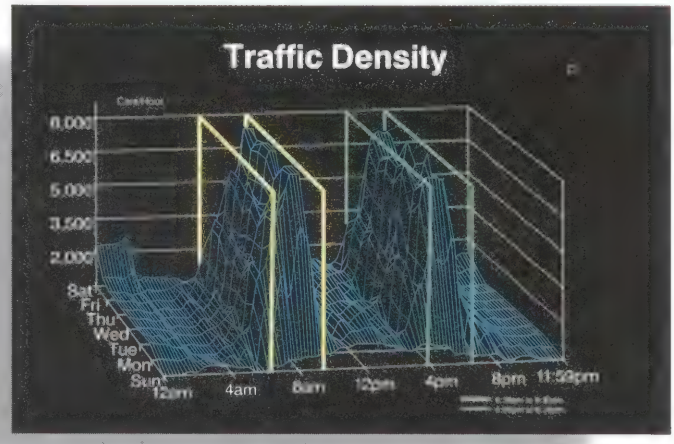

The SAS System runs on Sun Microsystems, Inc.'s Sun workstations under SunOS®; Hewlett-Packard's HP 9000 workstations under HP-UX; and on mainframes, minicomputers, and personal computers.

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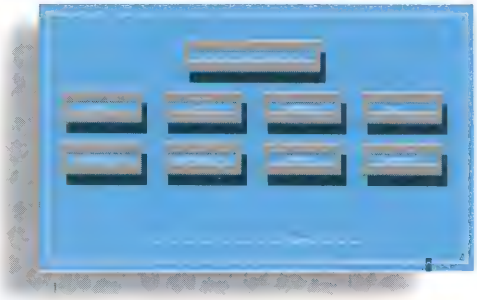

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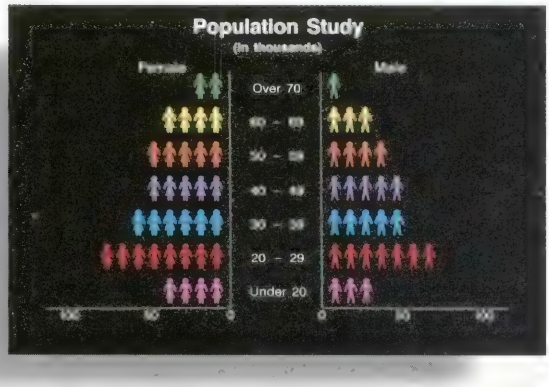

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The HP Used Equipment Market

An Historical Perspective And Look To The Future From One Who's Been There And Plans To Stay

Remarketing, dealers, brokers, used, secondary, pre-owned and even preloved are some of the terms used when describing the phenomena of buying somebody else's equipment or selling some of your own. Where did this market come from, and more importantly, where is it going in the future?

The market for used equipment in the Hewlett-Packard 3000 product line has been in existence for approximately 11 years, beginning in 1975. However, it was not until 1980-81 that the market truly took hold. Until then, HP was a part-time product line that supplemented other products for one or two dealers and supplemented service bureaus for a few others. One or two small dealers have been working the HP market full-time since 1975.

In 1980, the market in Hewlett-Packard equipment was estimated to have been three-to-five million dollars per year. The eight years since 1980 have seen explosive growth in the market, with 1988 sales estimates reaching 100 million dollars.

[BY MICHAEL MASON]

This growth rate was caused by several factors:

- *The extreme popularity and durability of the HP 3000.*
- *The introduction of the next generation of machines, the HP 3000-44 and 64 in late 1980, further increased demand for remarketed systems as Hewlett-Packard customers upgraded their systems and made older equipment available for purchase.*
- *Hewlett-Packard continued its succcessful sales campaigns, placing more HP 3000s in the field to expand the potential base for used equipment sales.*
- *As more brokers entered into the market, the base of used equipment users expanded.*
- *Hewlett-Packard placed its "seal of approval" on used equipment by opening its own "remarketing division" in 1982, legitimizing the used equipment marketplace. Explosive growth continued in the HP used equipment market from 1982 through 1987 because of HP's introduction of upgrades to its own existing line of CPUs and its delay in introducing the Spectrum line of products.*

These factors allowed dealers to compete aggressively with HP with cur-

rent generation products.

Increasingly, users wondered why they should pay list prices for the same machine they could get on the secondary market for thousands less.

This lack of obsolescence, as well as the continued sophistication of the user base, helped remarketers broaden the customer base of purchasers for remarketed equipment. By 1987, there were approximately half-a-dozen dealers and 18-20 brokers working in the Hewlett-Packard marketplace.

The difference between the two is that a dealer has significant inventories of equipment on-hand, while a broker tries to find equipment to fulfill specific orders.

The comfort factor of this older equipment is high, and remarketers will continue to recognize this factor and supply equipment to keep these systems functional for years to come.

Spectrum Causes Upheaval

THE ARRIVAL OF the Spectrum and related classes of CPUs, as well as a new generation of peripherals, has has caused an unsettling in the marketplace. Now that Hewlett-Packard finally has new technology to sell, new product introductions have occurred faster than users or Hewlett-Packard sales reps could comprehend. Older generation market prices have fluctuated broadly without settling into a stable trading range.

According to HP's plans, 4X-, 5X- and 6X machines now are "old" technology to be traded in or discarded. The same holds true with 7933H disc drives, 7978 tape drives and 2608/2619 printers. The 262X terminal should be replaced by the 2392 and the 2392 by the 700-92. The 2631B should be replaced by the 2932/94 and those replaced by the "RuggedWriter."

The only problem with this marketing plan is that the older equipment still works very well and, in many cases, better that the "new" technology that was supposed to replace it (not to mention at a significant cost savings as well). The price of the "older generation" machines drops as new products are announced as replacements.

The comfort factor of this older equipment is high, and remarketers will continue to recognize this factor and supply equipment to keep these systems functional for years to come. 4X CPUs, 2631B and 2608A sell well because they fill a need despite the fact that HP no longer lists them in the price book.

We also have found HP to be more aggressive than ever about losing systems to remarketers. If you are in the market for a system and have the time to wait for a quote from HP (in many cases remarketers can deliver a system to you before HP can deliver the quote), get quotes from HP *and* a remarketer.

It is amazing how many "remarketed" systems from HP have brand-new serial numbers and come from the factory. When HP is forced to compete with a remarketer, you win. HP either will discount its price and/or improve delivery, or you can purchase the equipment from a remarketer. Either way, you can end up with significant savings.

The transition of HP's offerings, however, has created both hardships and opportunities for those of us in the HP remarketing world. Remarketers with managerial problems, questionable reputations or lack of capital have suffered the most. Purchase prices of secondary equipment are in transition; equipment availability is uneven. Several dealers have become brokers and several brokers have left the market all together. In some parts of the country, brokers rise and fall very quickly. We who have maintained stable inventories and developed loyal customer bases have seen repeated attempts by the others to undercut our bases in a last gasp effort to survive in the market.

Although you as a user might benefit from these practices and get a good deal on a particular piece of equipment, the caveat "let the buyer beware" never has been truer in this market as it is today. The reputable remarketers may not always have the best prices, but their commitment to customer satisfaction makes it worth the additional money they may charge.

The remarketing world will remain strong for those who stand behind what they sell and are honorable in their dealings.

You can save thousands of dollars by using the services of a reputable remarketer. In many cases, you can get peripherals faster than you can get a return phone call from your HP rep and get systems as fast as you can get a quote from HP.

If you used a remarketer in the past, continue. If you haven't, try one. You may be surprised at how good a remarketer can be. *—Mike Mason is president of Hypoint Technology, Cleveland, OH.*

Would you like to continue to see articles on this topic?
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A Look At HP's Finance And Remarketing Division, Used Equipment Inventories And Used Equipment Warranties And Guarantees

2nd Hand Equipment

[BY PEGGY KING]

What's the competition like in the used equipment market? Which computers and peripherals are available? Which models can be sold easily because of high demand and which ones sit in a dealer's warehouses? How much refurbishment does a machine undergo before it is sold by a dealer? What kind of guarantee can you get on remarketed equipment?

These are just some of the questions that you, as a buyer (or simply a browser) of HP remarketed equipment, may have.

The Competition

HP'S FINANCE AND REMARKETING DIVISION (FRD), formed in 1983, has become the largest reseller of its own equipment. Chris Arnold, FRD's remarketing operations manager, estimates that HP controls 50 percent of the worldwide market for its own used equipment. In addition to a 55,000 square foot manufacturing site and a warehouse, which both relocated this year, Hewlett-Packard has remanufacturing operations in Boeblingen, West Germany and Melbourne, Australia and a remarketing facility in Toronto, Canada.

Although Hewlett-Packard's FRD, with 180 employees in its Mountain View manufacturing division alone, is far larger than any of the third-party vendors, Arnold contends HP doesn't compete directly with the independents, because their target customers are different. According to Arnold, the FRD is interested in reselling to large corporations, and they leave

the smaller customers to the independent vendors.

Despite HP's contention that they only are interested in the larger customers, many of the dealers have stories of competing head on with HP and losing when a customer had a high-end HP 3000 to sell. Dealers claim that it is next to impossible to compete with the FRD because of HP's policy of offering $120,000 for a Series 70. They refer to this policy as an upgrade credit available to customers migrating to MPE/XL with the 900 Series of HP 3000s. Because no other dealers can match the incentive pricing used to encourage sales of MPE/XL machines, the only Series 70s that other dealers ever get are ones bought from customers switching out of MPE. Several dealers also have said that FRD owns the market for HP 3000 Series 58s as well, but the upgrade credit for a Series 58 is far less and depends on the configuration of the machine. A 4-MB Series 58, for example, will bring in only about $21,000.

What do you do with your old Series III? Tony Lucero of HP uses it to hang his coat. This particular unit was "refurbished" and made into a coat closet several years ago by HP's Finance and Remarketing Division.

When selling used equipment, maintenance is a big issue. An HP Certificate of Maintainability is a document that certifies that a machine has been kept under HP maintenance. Owners who keep up the HP maintenance contract get a certificate that ensures the next owner of eligibility for HP maintenance as well. Owners who let their HP maintenance contract lapse deny future owners the opportunity to subscribe to HP maintenance because HP can refuse maintenance on any machine without the certificate. When asked if they had ever encountered a problem getting HP to honor a Certificate of Maintainability on machines they resold to customers, the dealers said that there had never been a major problem.

Generally, the remarks about HP's field service and customer engineering were positive. A few of the vendors proudly stated that they had employees who were formerly with HP field service.

Some of the dealers mentioned that they perform an important service for Hewlett-Packard by reselling machines that FRD no longer resells. Larry Lehman, president of Crisis Computer Corporation, mentioned that used equipment vendors "help keep HP customers with HP." Without the option of buying reasonably priced used equipment, some current customers would turn to other vendors for their needs. Since FRD no longer resells Series III, Series 30 or Series 33 in the HP 3000 family, customers who still need to run existing systems have to go to third-party vendors.

A number of dealers expressed dissatisfaction about FRD's competitive pricing strategies, especially the $120,000 upgrade credit. Many of them regretted the fact that they could not fill buyer demand for Series 70s, because FRD has cornered the market by offering a price that no independent dealer can match. A few mentioned difficulties with obtaining HP Service Notes for bringing machines up to the latest revision.

Inventories

DEALERS IN THE HP USED equipment business have a variety of specialties. Most, but not all, of these vendors exclusively deal in HP equipment. Since there is only a nominal difference between the cost of shipping equipment 300 miles and shipping it 3000 miles, a dealer's inventory in the machine you seek and the kind of guarantees he or she can offer a purchaser should be of more importance than the location of the business.

There are a few vendors who will stock any computer or peripheral that HP sells, but most have specialties within the product line. Even HP doesn't sell the complete product line of used computers and peripherals. FRD began reselling HP 9000 workstations only recently, and they quit reselling HP

[The State Of The Used Equipment Market]

Gerald Heath is one of the founders of the HP used equipment industry.

Twenty-one years ago he founded Computer Solutions (Orange, NJ). About twenty-years ago he started with HP equipment by running a timesharing operation. "When the applications grew, we put in systems for our online customers. The work with systems got us involved with the hardware." Heath has led his company from the timesharing days into the era of Precision Architecture, and his experience puts him in a position to foresee the future for independent used equipment dealerships.

Heath predicts tough times ahead for the industry. He believes that being a used equipment dealer will require a larger cash investment than ever before. Although computers have become more powerful and less expensive every year, dealers' costs have risen and margins have been squeezed. "You have to have deep pockets to sustain the research and training costs needed to deal with the short product lives of today's machines." As a result, he foresees a shakeout where only a few major vendors will survive and the smaller players will be relegated to act as subcontractors. "The dealers who have made the investment in equipment will be the ones who survive."

Heath also feels that the dealer needs to have good business sense to thrive in today's market. "It's not enough to balance the checkbook. You need to know the difference between profitability and cash flow. Don't think you have made a profit until you consider your overhead costs."

Some reasons that Gerald Heath cites for the rapid changes in the used equipment business are changes in the manufacturing and packaging of computers and peripherals, the rapidly accelerating pace of technology and the recent price competition from HP's Finance and Remarketing Division (FRD).

Up until a couple of years ago, getting a new CPU usually meant needing to replace at least some of the peripherals in a system. Today, a customer with Precision Architecture machines can replace a CPU with a simple board swap. Although the new system may be twice as powerful as the previous one, the only thing the customer has on hand to be traded is the old processor. "Up until now, a shipment of used equipment to the refurbishment department of a dealership meant parts to be cleaned, repaired and tuned. Now many of these machines have sealed parts that cannot be repaired or even opened if they are to remain under HP maintenance."

The advances in technology also may make it more cost effective to pay the higher price for newer equipment in exchange for a lower cost of ownership. For example, the newer, more compact Precision Architecture machines require less space, consume less energy and do not require special rooms. Because RISC architecture simplified the manufacturing and lowered production costs, HP was able to price the HP-PA machines much lower than the traditional CICS machines with comparable processing power. "Now that the newer machines offer such great price performance, used equipment will be less of a bargain than it was in the past."

Heath echos the sentiments of fellow dealers when he speaks of the difficulties of competing with FRD. "FRD has the market cornered on the 3000 machines from Series 58s through 70s because no dealer can afford to offer the kind of deals HP can give to customers planning upgrades."

Heath's advice to anyone in the used equipment today is "diversify and find new niches in the market."

150s after losing money putting these microcomputers through their extensive refurbishment process. You also will need to consult an independent vendor in order to buy any computer or peripheral that has been dropped from this year's price list.

The following outlines the market for and available inventories of HP used equipment:

HP 3000s — In general, there is little demand for used Series IIIs, 30s and 33s, and most of the prospective buyers plan to use them for spares. Series 42s and 44s also are difficult to sell and may be parted out rather than refurbished. On the other hand, almost every used equipment vendor selling HP 3000s complained that there weren't enough Series 58s and 70s to meet the demand. Any customer who is upgrading to HP-PA will offer these machines for buyback credit.

HP 1000s — The Series E and F are starting to die, but there still is a strong demand from government users. The A900 models are the newest and usually the ones most in demand.

HP 9000s — In general, Series 500 workstations are slow to sell because their price/performance compares unfavorably with Series 800 Precision Architecture models. In the 9800 Series, there is very little demand for the model 9845 graphics CPU. A few used equipment vendors report that Model 300 workstations, especially 310s and 320s, move quickly.

Personal Computers — With the exception of the Portable Equipment Exchange, used equipment vendors do not seem interested in reselling PCs on a per-unit basis. The trend seems to be that they buy HP 150s and Vectra PCs as part of a package deal and resell them to buyers seeking to set up a networked system. It is difficult to note trends in this area except that the biggest demand for HP 150s is from installed base customers seeking replacement units now that HP's FRD has stopped reselling that model.

Printers — In general, there is no demand for printers from the 261x Series or for the 2631A. Demand for the 2631B line printer is healthy. Also, the 300 line-per-minute model 2563B is in steady demand.

Among laser printers, there is a large demand for LaserJets because there are so few used units available. There is very

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Shown below are three traditional UPS configurations. Each has its advantages and disadvantages.

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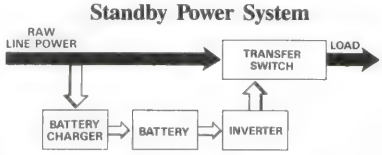
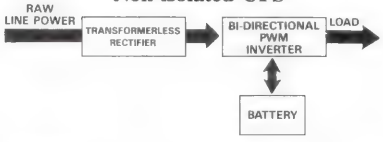


Advantages:
- Low cost
- Inverter normally off
- High efficiency

Disadvantages:
- No derived neutral
- Break in transfer
- Poor isolation
- Poor brownout protection
- Poor high line protection
- Poor lightning protection

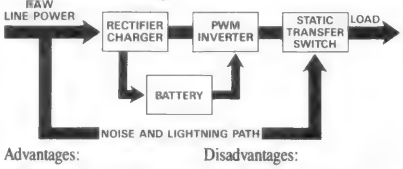
Non-isolated UPS



Advantages:
- Moderate cost
- Brownout protection
- High line protection
- No break system

Disadvantages:
- No derived neutral
- Poor isolation
- Inverter on continuously
- Poor lightning protection
- Non-linear load

Partially Isolated UPS



Advantages:
- Brownout protection
- High line protection
- Partial no-break system
- Separately derived neutral

Disadvantages:
- Break in transfer to line
- Poor isolation
- Poor lightning protection
- Non-linear load
- Poor efficiency
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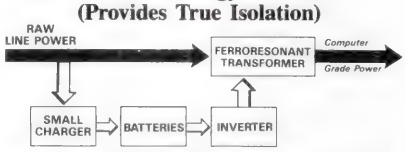

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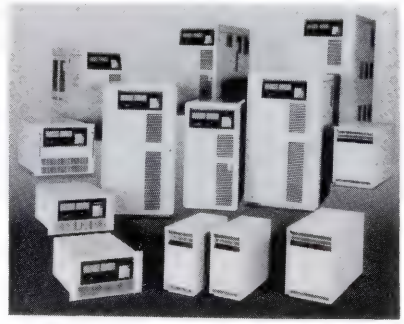

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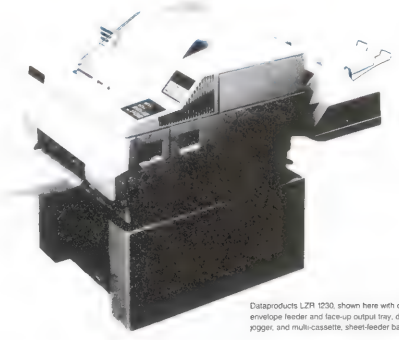

Dataproducts LZR 1230, shown here with optional envelope feeder and face-up output tray, document jogger, and multi-cassette, sheet-feeder base

- BROAD COMPATIBILITY—LZR 1230 is compatible with Diablo 630, Epson FX-80 and HP Laserjet Plus. Supports the IBM PC graphics character set.
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CIRCLE 149 ON READER CARD

little demand for the larger, more expensive lasers.

Disc drives — Most dealers would love to get their hands on some Eagles. Some say that EMC drives also are popular. Any model before the 7933 is considered obsolete because the machines that use them are no longer on HP's price list. The supply of 7920s and 7925s is so plentiful that some vendors find it worthwhile to sell them two for the price of one to save their technicians from having to bring in machines that need spare-part replacements. There is divided opinion about the resale value of 7933s. Some dealers report having too many and others say that demand for them is high.

Tape drives — Dealers who sell smaller machines report a strong demand for the 9144 cartridge tape drive because it can be used with so many different workstations. There is still demand for 7976s and 7978s and the 7980s will be fast sellers as soon as they hit the resale market.

Almost all dealers agree that there is no demand and too much supply of the 7970B and E.

Miscellaneous — Although few vendors carry plotters, those who do said that used plotters, especially large ones, sell very quickly. On the other hand, graphics tablets and 2624 terminals sit around gathering dust.

Warranties And Guarantees

HP AND OTHER DEALERS WHO offer service contracts for maintenance can offer the best warranties. HP's FRD promises customers a 90-day warranty with the same terms and conditions as new HP equipment. Several used equipment vendors offer maintenance contracts for used equipment although most of these contracts are offered only in service areas near the dealership. If the machine will be maintained by the vendor that sold it, it is typical to offer a 90-day guarantee.

The most common kind of warranty that third-party dealers provide for vendor-installable equipment (HP 3000s and 1000s and their peripherals) is a guarantee that the machine will be eligible for HP maintenance. HP will not place a remarketed machine purchased from a third-party vendor under a service contract unless it has been de-installed by an HP CE (customer engineer) and has been running at least 30 days. Since HP will not issue a new service contract on machines that were not de-installed under its supervision, the Certificate of Maintainability can't be extended to these machines. Dealers who resell machines not properly de-installed usually sell them on an "as is" basis.

Dealers usually provide longer term guarantees for customer installable machines and peripherals. The smaller the computer, the longer the warranty. For example, the Portable Equipment Exchange provides a one year warranty with all HP Portables, but the same guarantee costs extra for customers who purchase a used HP 150. Most used workstation vendors

have a 90-day warranty and some are willing to take back machines with problems even after that period has expired.

With a customer-installable machine, the buyer relies on the dealer's integrity to uphold the promise to repair or replace a defective unit. The buyer has somewhat more protection with HP installable equipment if problems arise during the 30-day waiting period. A guarantee of eligibility for HP maintenance means that the dealer is responsible for spending whatever amount of money it takes to make the unit eligible for an HP service contract; this often entails sending purchase orders for parts to HP. The customer never gets involved even if the unit needs extensive repair. One dealer told of having to submit a $15,000 purchase order to HP to replace a defective part on a large laser printer he resold.

There, unfortunately, is no industry standard definition of refurbishment in the used equipment business. So, what does it mean to buy a "refurbished" machine and how can I make certain that the machine I buy truly is refurbished? What are the steps that the best remarketers use to refurbish a machine completely?

At the high end, HP's FRD puts all equipment through a remanufacturing process. FRD receives its inventory through rental and leasing returns, demonstration machines and tradeins. All equipment that comes in must pass inspection to qualify for remanufacturing. After thorough cleaning and electrical updates, each piece is run though several hours of mechanical, electrical and diagnostic testing. Any machine that is to be sold comes with a Certificate of Quality signed by the assembly technician, test technician, electrical inspector and final equipment inspector.

This attention to detail, however, comes at a hefty price. FRD's prices for remanufactured equipment are significantly higher than those of the independent dealers, some of whom also put machines through extensive rework and testing.

The level of refurbishment you accept can depend upon what you will be doing with the machine. You can decide what level of refurbishment you are willing to pay for by considering your reasons for the purchase.

If you are buying the equipment to start a new business or start using new and more powerful applications, you will want to purchase machines that meet the latest engineering specifications. In order to get the latest functional updates (revision level changes), you will need to buy from FRD or from an independent dealer who purchases Customer Engineering Organization Service Notes from HP.

If you want to duplicate your old system to keep existing

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1086 Bessemer
Manteca, CA 95336
Specialty: HP 1000
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Computer Media
1420 Brook Drive
Downers Grove, IL 60515
Specialty: HP 1000
CIRCLE 297 ON READER CARD

CompuChange
13160 56th Ct. #503
Clearwater, FL 34620
Specialty: HP 1000, 9000
CIRCLE 296 ON READER CARD

CompuTech Systems
2721 152nd Ave.
N.E. Redmond, WA 98052
Specialty: HP 9000
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Computer Solutions
397 Park Ave.
Orange, NJ 07050
HP 1000, 3000
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ConAm Corporation
1661 Nineteenth St.
Santa Monica, CA 90404
Specialty: HP 1000, 3000
CIRCLE 293 ON READER CARD

Crisis Computer
2298 Quimby Rd.
San Jose, CA 95122
Specialty: HP 1000, 9000
CIRCLE 292 ON READER CARD

CRC
246 East 44th St.
Beachwood, OH 10017
Specialty: HP 3000
CIRCLE 291 ON READER CARD

CSU Industries
135 Rockaway Turnpike
Lawrence, NY 11559
Specialty: Peripherals
CIRCLE 290 ON READER CARD

Electronic Services
5187 — Suite A
Malaga — Alcoa Hwy.
Malaga, WA 98828
Specialty: HP 9000, Series 80
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Eurodata Inc.
2574 Sheffield Rd.
Ottawa, Canada KIB 3B7
Specialty: HP 1000, 3000
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HyPoint Technology
4333 E. Royalton Rd.
Cleveland, OH 44147
Specialty: HP 3000
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Microtek Systems Int'l.
8370 Dow Circle
Cleveland, OH 44136
Specialty: HP 3000
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Norco Computer Systems
30311 Clemens Rd.
Cleveland, OH 44145
Specialty: HP 3000
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Oceonics Inc.
2984 S. Lynnhaven Rd.
Suite 101
Virginia Beach, VA 23452
Specialty: HP 3000
CIRCLE 284 ON READER CARD

Portable Equipment Exchange
P.O. Box 869
Fairfield, IO 52556
Specialty: HP portables, ThinkJets
CIRCLE 283 ON READER CARD

Ted Dasher & Associates
P.O. Box 699
Old Smar, FL 34677
Specialty: HP 9000 Series 80
CIRCLE 282 ON READER CARD

TSA
4654 Highway 6 Suite 101
Houston, TX 77084
Specialty: HP 9000 plotters, instruments
CIRCLE 281 ON READER CARD

applications running, you may not be interested in the latest software revisions and the newest ROM chips. It may be sufficent to purchase a machine that has received a thorough cleaning. Because HP (along with all major U.S. vendors) charges high prices for Service Notes, you can expect lower prices on machines that have not been brought up to the latest levels.

Another reason you may be in the market for used equipment is to have a spare for doing self-maintenance. In this case, you may be willing to buy a machine that will not qualify for HP maintenance. You don't care how the machine performs; your only concern is that it has all the parts needed to keep your original system up and running. Some dealers who refurbish most of their equipment buy and resell some equipment ineligible for HP support at low "as is" prices.

Some dealers clean the machines, but do not refurbish them. A couple of them said that they do not go inside a machine that has an HP Certificate of Maintainability for fear of invalidating the certificate.

If you are doing business with dealers who do refurbishment and therefore include this service in the purchase price, your job as a buyer is to learn what the term refurbished means to the dealer. How did the equipment you are considering earn the distinction of being refurbished instead of simply pre-owned?

At the low end of refurbishment, you can expect that refurbished means repainted panels and replaced filters. A step up is the dealer who also realigns the heads on peripheral drives and tests all mechanical components. The next step would be dealers who have their own systems in house for running electrical and diagnostic tests. If you find a dealer who replaces ROM chips and software to bring computers up to current specifications and engineering levels and runs performance tests, you are buying an extensively refurbished machine. A good question to ask a dealer who does this level of refurbishment is which service notes have been used to update the machines. You may hear dealers complain that the Division Service Notes, that tell how to update a CPU to a newer model, are proprietary.

By asking the right questions and learning about each dealer's refurbishment policies, you have made your best effort to assure that the level of refurbishment is in line with the price you are paying for a used machine.

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CIRCLE 168 ON READER CARD

Texas Instruments: Another Optical Believer

FROM MAGNETIC TAPE TO OPTICAL DISC

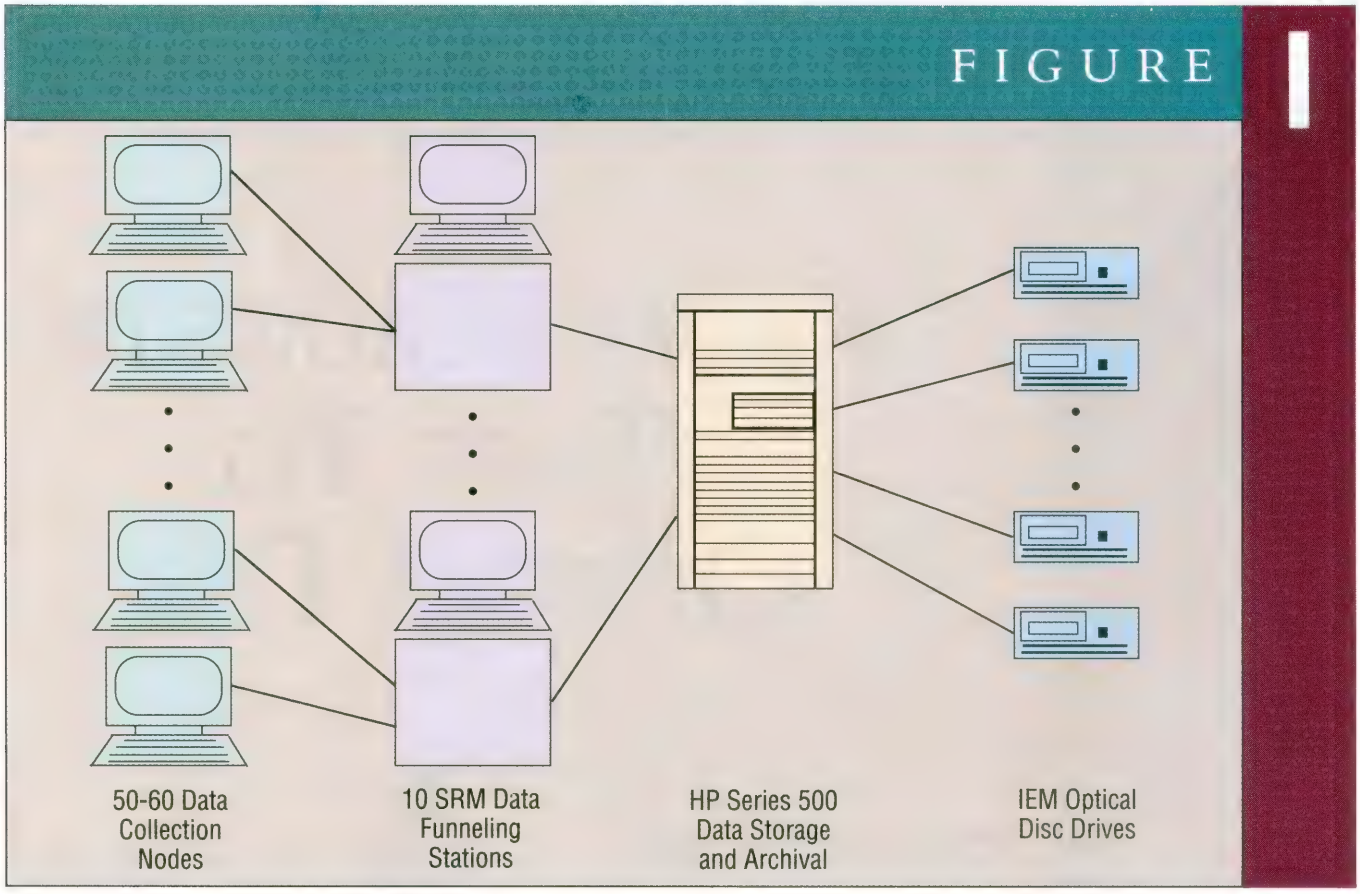
[By Jack Edwards]

At the Texas Instruments plant, (Lewisville, TX) great amounts of data are produced, collected and stored on a daily basis. We are responsible for the manufacturing and testing of missiles and missile parts. We are required, by contract, to keep all information, such as manufacturing specifications and test results, on record for five to seven years.

Our original system used HP Series 500 computers, running the HP-UX operating system, to archive collected information onto magnetic reel-to-reel tapes. The information was collected using roughly 60 computers attached to 10 Shared Resource Management systems (SRMs). The Series 500 computers, in turn, gathered the information from the SRMs and archived it onto tape. After using this system for several years, it became apparent that using magnetic tape for such a task was impractical. In particular, there were three major problems that needed to be solved: space, speed and shelf life.

At the plant, we archive an average of 1200 MB of information each month, in files ranging in size from a few hundred bytes to 1 MB each. Taking into account the fact that we make backup copies of each tape, we store over 2400 MB on a monthly basis. The reel-to-reel tapes we were using were 2400-foot tape reels (1600 bpi) that held a maximum of 40 MB each. Simple math will show that we were using a minimum of 60 tapes each month, assuming that each tape was filled to capacity. These tapes took up a great deal of space: Like many large plants that use magnetic tape for archival purposes, we had an entire room solely dedicated to the storage of these tapes.

Speed (or rather, the lack of it) was another critical downfall of our system. Both the storage and retrieval of information was a time-consuming task. Magnetic tape



The Configuration Of HP Computers and IEM Optical Discs Used At Texas Instruments.

is, in comparison to other data storage methods, an unreliable medium. Because of the high error rate of magnetic tape, data continually had to be verified and corrected as it was archived and copied for backup. To keep track of where the information was stored, we used an indexing system that was partially computer generated, but required a certain amount of operator intervention. When it became necessary to retrieve the information, we really lost time.

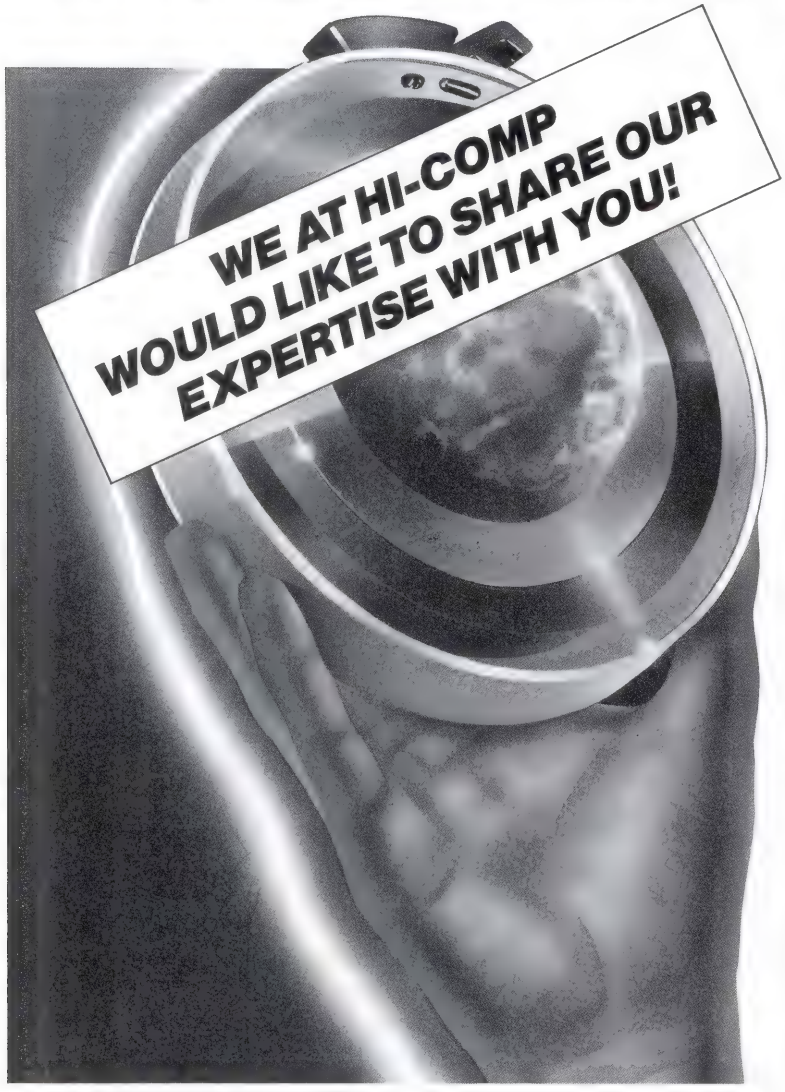
To retrieve a specific file, we first had to locate the tape it was stored on and then use the index to pinpoint its location on the tape. Once the location was determined, we had to search the tape sequentially for the archive containing the file. To locate an archive at the end of a tape reel could take up to 20 minutes by the time the tape was forwarded to the proper place. Information was archived in clusters using the UNIX **tar** operation: Each archive easily contained 50 files or more, which could have been scattered over more than one tape. The **tar** format does not allow a single file to be opened on the tape itself, so each archive had to be downloaded onto the hard disc before the files could be searched for the information we needed.

Finally, and most importantly, magnetic tape has an average archival life of only three to five years, a real problem when you have to maintain data integrity for a longer period of time. Information stored on tape is subject to corruption from stretching, breaking, external magnetic fields and print-through. Print-through, a common problem when tapes are stored for extended periods of time, occurs when the magnetic field (representing the data) from one layer of the tape migrates to an adjoining layer, corrupting the data. One way to reduce the chances of data loss from print-through is to hire people to rewind and fast-forward tapes constantly so adjoining tape layers are not in contact for extended periods of time. This is not only expensive (not to mention boring work), but it tends to defeat its purpose by increasing the chances of data loss from stretching and breaking.

The Move To Optical Disc

WITH THESE PROBLEMS facing us, a new solution was sorely needed. With the introduction of optical disc technology for HP computers, the solution presented itself. After doing some research, we decided that optical discs would be ideal for our particular needs: the efficient archival of large amounts of data that can be accessed

HOW TO DO BACKUP IN A MOST EFFICIENT WAY?



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User Selectable Compression			yes
Automated Functions			yes
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CIRCLE 135 ON READER CARD

quickly and stored compactly. A typical optical disc cartridge can store well over 500 MB of data, takes up a minimal amount of space and can be accessed randomly (and without any downloading) to save a great deal of time searching for files.

> Our indexing process has been automated completely, which helps eliminate human error and makes the operation fast, inexpensive and robust.

With the same reliability as Winchester hard discs, this became our "medium of choice."

We evaluated several different systems to determine the one that would work best for our situation. The different drives were evaluated on the basis of price, performance, size and the stability and support services of the company selling the drive. Our search was narrowed to those systems compatible with Series 500 computers, as we had no inclination to discard our existing hardware. The solution we finally chose was IEM Inc.'s 800-MB WORM (Write Once, Read Many) optical disc drives. These drives use 5¼-inch disc cartridges with a storage capacity of 800 MB. There were three features of this particular system that significantly influenced our decision.

First, this particular drive was the only Series 500-compatible drive that used the HP-IB interface. Though the other drives we looked at were compatible with Series 500 computers, they could not be connected simply by attaching an HP-IB cable.

Second, the IEM drive came complete with software utilities to operate the drive, a feature that is rare out in the market. Though many systems boast of compatibility with a wide range of machines, it is often up to the user to create the software that allows access to the drive. Not only did the system we select come with software, but IEM was very willing to work with us to modify the software in those few areas where it fell short of our needs.

Third, the IEM system supports multiple archives on a single cartridge. With the vast majority of available systems, all of the information that you want to store on a disc must be stored in a single operation. Once any amount of information is written, an end-of-file mark is put on the disc and further attempts to write to the disc will fail, no matter how much space actually remains. Therefore, all information on the disc must be stored in one large archive: a 200-MB disc cannot be broken up into ten 20-MB archives. This is not the case, however, with the IEM system. Even though the disc is a WORM disc, the software has been written such that information can be written to virtually any empty space on the disc. And, information does not have to be written sequentially. Access to the disc is almost as random as magnetic diskettes.

The Results

AFTER ONLY A FEW minor modifications to the software that orchestrated our old system, we were ready to convert to the optical system. The configuration we now are using, with the IEM optical drives in place of magnetic tape, is shown in *Figure 1*. It will take roughly one year to transfer all of our existing archives from tape to optical disc. But, when the task is finished, a great number of problems will have been solved.

We will save both money (by using five or six cartridges per month instead of 60+ tapes) and space using optical cartridges: a single 800-MB cartridge can store as much information as 20 reel-to-reel tapes. Data storage times have dropped at least 50 percent, partly because of the modifications to our software, but largely because of the reliability of optical media, which has allowed us virtually to eliminate the time spent verifying data during archival and backup.

Our indexing process has been automated completely, which helps eliminate human error and makes the operation fast, inexpensive and robust. Data retrieval times have decreased tremendously. Information stored on optical disc can be accessed randomly and directly (without being downloaded onto hard disc). Information that would have taken an entire work-week to extract now can be extracted in the same day.

Finally, the optical disc cartridges (which have an average archival life of 10-20 years) will provide true data security: Information stored on a WORM cartridge *cannot* be erased or overwritten, either accidentally or intentionally.

Conversion to this new system has gone very smoothly so far. We still are busy copying our existing tapes (containing our previously archived data) onto optical disc and getting used to the new technology. In the coming months, when our conversion from the old system to the new is complete, we will be accessing the optical discs around the clock: two shifts a day will be archiving information, and one shift will be extracting stored information. With the help of optical disc technology, we look forward to enjoying more productive and efficient operation in the future. *—Jack Edwards is assistant administrator for the Test Equipment Network (TEN) at Texas Instruments, Lewisville, TX.*

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CIRCLE 109 ON READER CARD

HEWLETT PACKARD

Cutting Costs

Successfully Reducing Computer Room Energy Costs

Our HP 3000 computer operation runs 365 days a year, around the clock, and is comprised of two 950s, four 70s and a 42.

We cut our computer center's energy expenses more than 20 percent by making changes involving little or no cost. The major opportunities we found for cutting energy costs involve lighting and air conditioning.

FIRST, WE NOTICED that the computer room was considerably overlighted.

There were three 40-watt lamps in each of our ceiling light fixtures. We found that the two outside lamps gave plenty of light and we confirmed this fact with light meter readings.

After checking with the manufacturer of our particular ballasts to verify that their equipment was compatible with our plans, we removed the center lamp of each fixture, which ran on a separate ballast, and replaced the two outboard lamps with 32-watt lamps. The 32-watt lamp is rated at 92 percent as much light output as a 40-watt unit, but uses 20 percent less power. We also completely delamped some fixtures that were in unoccupied areas.

Our payback computations showed that it was extremely worthwhile to replace the 40-watt lamps with the 32-watt units all at once.

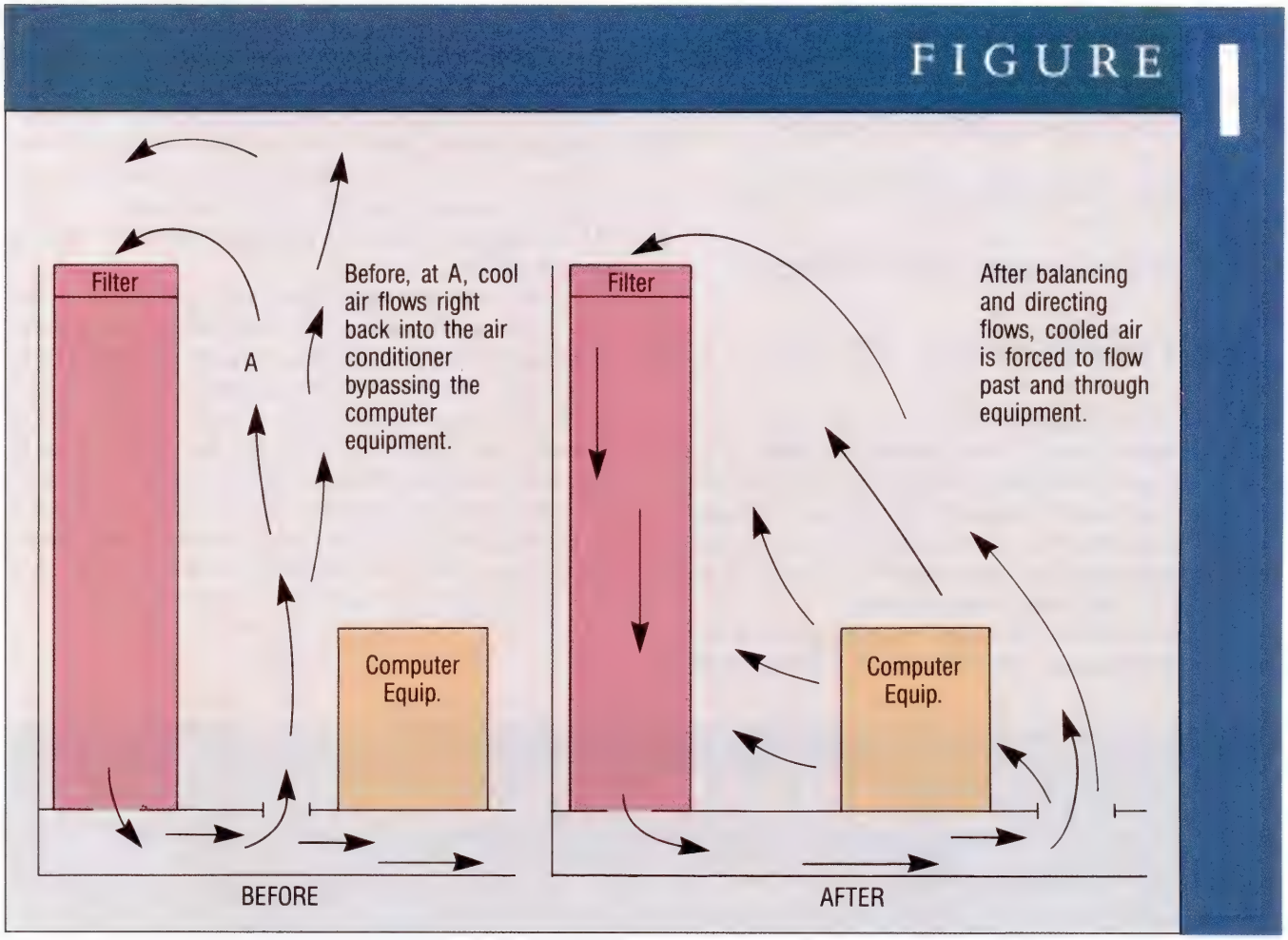
Additionally, our utility company had a conservation incentive rebate program that paid us another 75¢ for each replacement of a 40-watt lamp with a 34- or 32-watt unit. Even without the rebate, we had a better than 12 month payback.

WE HAVE FIVE HVAC units from the 1970s each with dual 5-ton compressors. The computer room is run as an isolated system. In our case, we found that the air conditioning system was grossly oversized considering the amount of heat thrown off by the existing computer equipment. For one thing, HP is conservative in the nominal btu output they mention in specifications for disc drives. Thus, when HVAC engineers use these values in making the original equipment recommendations, they understandably can propose a little too much capacity.

Related to air conditioning costs, we also found that the floor diffusers were insufficient (in total area) to handle the volume of air that the units were trying to deliver. This appeared to cause all the units to run pretty much all the time, in spite of the extra capacity just mentioned. Moreover, the internal thermostat controls on the units were set too low and controlled only the compressors, not the fans, and both compressors always ran.

To address this situation, we had our air

[BY JAMES CALL AND ROBERT ROCHA]



Effect on air flow balancing.

conditioning company install new thermostats that control the entire unit. By staggering the settings across the five units, only those that are necessary run. This accommodates the variable heat load caused by changes in weather and operations activity, but at the same time automatically keeps our spare capacity turned off unless needed. We also reset the cooling throttle range (Cool T.R.) control so the compressors within the running unit truly stage up.

We also are adding floor grates and redirecting air flow as needed to improve efficiency. *Figure 1* illustrates before and after scenarios in air flow. The improvement comes from making the cool air flow past the equipment, rather than "short circuiting" back into the HVAC unit.

Energy Idea Checklist

Our approach to low cost energy savings is summarized in the following checklist of ideas.

- *Challenge existing energy use systems and patterns. Ask yourself whether a given energy-using device is needed at all, or can its duty cycle be reduced, or is there an inexpensive alternative.*
- *Look first at low cost or no cost approaches. Otherwise, it is hard to make a conservative analysis of costly projects. Some high cost projects wrongly try to get credit for savings you could have had anyway for less expense.*
- *Contact your electric utility company. Many utilities provide free assistance, including energy audits and rebates. They publish informative background material.*
- *Work with your air conditioning maintenance company and the equipment vendor to balance the air flows in the room. Make certain that you reasonably have matched volume flows and that cool air goes where you need it.*
- *Have your equipment serviced on a regular basis. Filters gradually can reduce HVAC efficiency if allowed to clog up.*
- *Use outside air when temperature and moisture content are appropriate. An HVAC engineer can discuss systems that do this automatically.*
- *Re-evaluate HVAC and lighting strategy when changes are made in use of the space or type of operating equipment. A newer type of equip-*

> Many companies still use 40-watt flourescents even though the reduced watt lamps have been available since the 70s.

ment may use less energy than the equipment it replaces.

■ *Use automatic controls to keep redundant equipment off until needed, as it would be if the main equipment failed. (Consider rotating the main versus standby status to keep all equipment in shape.)*

■ *Try not to run everything at once. Stagger large loads. This reduces peak electric demand, which most commercial accounts pay more for. Your utility will have detailed advice on this.*

■ *Look hard at lighting. The major lamp manufacturers have free, informative booklets. We see a lot of offices grossly overlighted, especially in hallways and infrequently used spaces. Many companies still use 40-watt flourescents even though the reduced watt lamps have been available since the 70s. They cost somewhat more, but depending on your electric rate structure, the total replacement cost can have under a two-year payback. There are energy efficient versions of all common lamp types. Check with the lamp or ballast manufacturer to assure safety, efficiency and compatibility of the total system.*

■ *Document your findings. Track ongoing utility costs by reviewing monthly invoices.*

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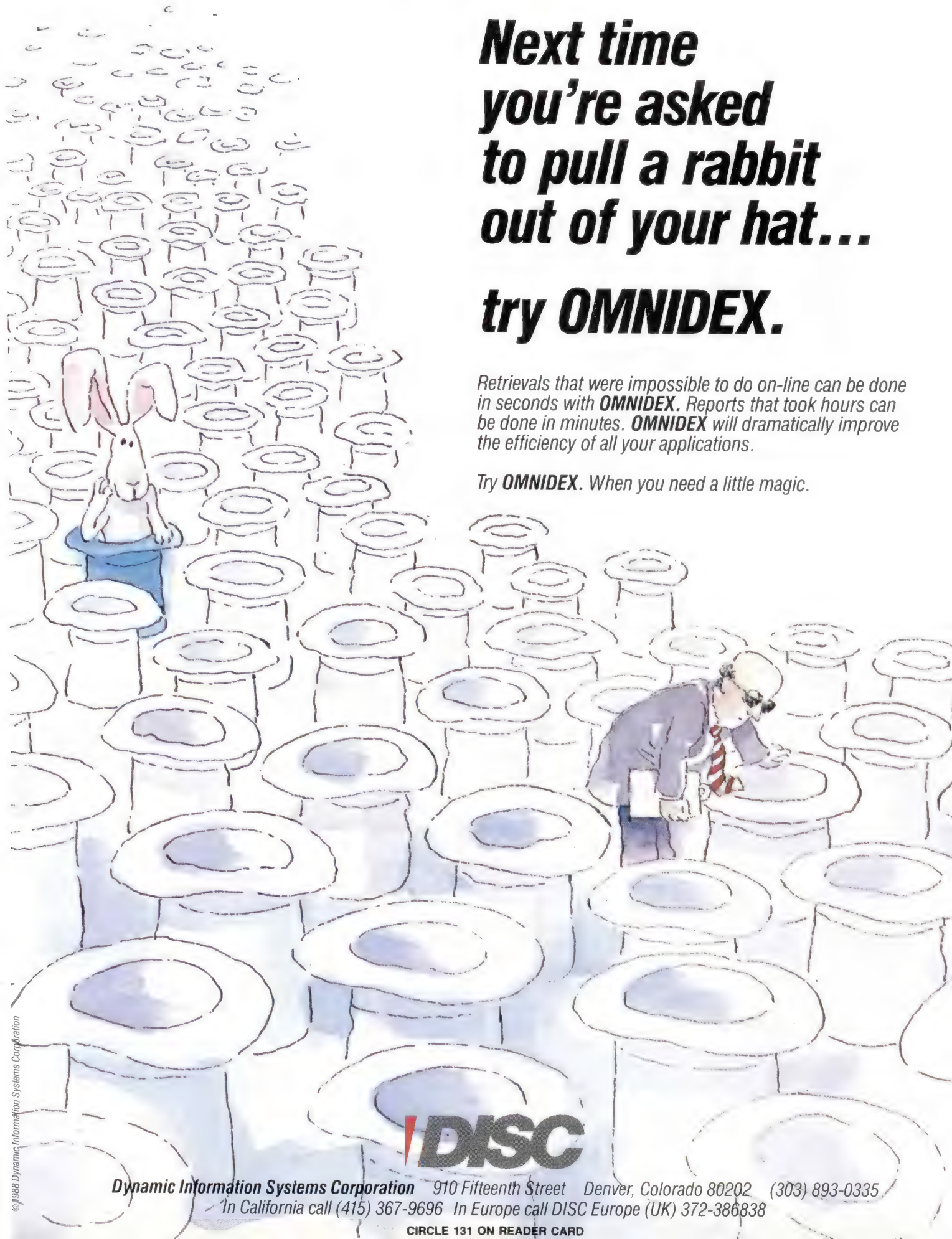

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HP PRO ASKS DAVID DUMMER

The Evolution Of End-User Computing

INTERVIEW

Kathy McKittrick

Editor's Note: David Dummer is the president and founder of IMACS Systems Corporation, which develops and markets the DataExpress software family of end-user computing products. With more than 20 years of experience in data processing, the last 12 of those in the HP 3000 world, Dummer has played a significant role in the advent of end-user computing for users of Hewlett-Packard business computers.

Kathy S. McKittrick, of McKittrick Associates, conducted this interview, at the request of HP Professional, *at the 1988 North American Conference of Business and Technical Computer Users in Orlando, Florida.*

Q: As a veteran software developer for the HP 3000 environment, what is the most significant advancement in computing you've seen over the last decade?

A: There have, of course, been tremendous advances in both hardware and software over the past ten years. The most significant have been those that have brought computing to the individual user in the form of a personal computer (PC). Ten years ago, most users were far removed from the direct use of computer systems. Hardcopy reports were distributed weekly and monthly and, in many cases, users had to manually manipulate the data included in these reports in order to obtain any useful information. Computer hardware manufacturers, such as Hewlett-Packard, had introduced systems that were conducive to interactive computing, but to a large degree, users and MIS departments alike resisted the move to end-user computing.

Today we see a significant trend towards giving users the access to and responsibility for their own data.

Q: Why were users and MIS departments reluctant to make the change?

A: There were several reasons. First, the tools required to offer users the flexibility and ease of access to information simply weren't there. MIS departments were responsible for developing interactive routines for users, and these often were rigid and inflexible. Typically, data-entry operators and clerical personnel were still the only people using interactive processes for operational tasks. Strategic and tactical decision makers were still a long way from making use of the volumes of data being stored.

The introduction of small minis, such as the Series 37, moved the computer hardware itself into the user department, but this did nothing to enhance access to the information stored on the computer system. MIS still had to be involved in developing programs before users could get at the data.

The data itself was viewed as being owned by MIS. In fact, many shops still suffer from this misconception today.

Q: Who does "own" the data?

A: The users themselves. Entering data into a computer system is like putting money into a bank. It still belongs to you, but the bank acts as a service organization to protect the money and, hopefully, increase its value. A bank only is as good as its ability to make that happen. The same is true of the relationship between end-users and an MIS department. The MIS department may own the hardware, but its service only is as good as its ability to make data (or information) grow in value. But the data itself still belongs to the user.

Q: How can information grow in value?

A: By making it accessible to strategic and tactical decision makers through tools that allow

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those decision makers to manipulate and refine it according to their immediate needs.

Q: To what extent has the PC played a role in offering these capabilities to users?

A: The PC has played the most significant role in exposing management users to computing. For example, the use of spreadsheet software, which allows fast and easy manipulation of data so that managers can pose "what if" questions and predict results of their decisions, has not only made them more comfortable with the use of computers, but it clearly has illustrated the benefits of computers as management tools.

But PCs are only one part of the equation. Corporate data typically is voluminous and needs to be shared among many different departments. While the PC is useful for individuals manipulating data in many different ways on an as-needed basis, the data itself still must be stored and managed on a mainframe or minicomputer.

Q: What is missing from the equation then?

A: Well, interestingly enough, at the same time PCs were gaining acceptance, development efforts were going on in the mainframe- and mini-world that eventually would lead to the marriage of corporate data and end-user computing.

One example of these efforts was my work at Bell-Northern Research in the early 1970s. We completed several projects that front-ended database and file management systems with processing and report specification systems. Essentially, what we wanted to do was offer users the ability to state a data processing problem and have an "interpreter" generate transactions to solve the problem. I suppose you could relate this to a macro level approach, but at the user level.

David Dummer is the president and founder of IMACS Systems Corporation, Seattle, WA.

Q: Would you refer to such a capability as a fourth-generation language?

A: Not entirely. I like to make a clear distinction between fourth-generation languages and end-user computing tools. This is a common source of con-

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fusion in our industry, because both make use of some similar technologies, such as the data dictionary. But they are different fundamentally.

Fourth-generation languages reduce the time it takes for an MIS department to develop and maintain application software. This is accomplished through the use of data dictionaries and high-level languages that are compiled or interpreted to generate transaction codes or program code in a lower level language.

End-user computing tools, on the other hand, are designed specifically to be used by the business user. While they, too, make use of data dictionaries to define, organize and secure data, they are (or should be) designed to interface and interact with the end-user based on the way that end-user thinks, which is very different from the way a programmer thinks.

Q: Are you saying that end-user computing tools require no user training?

A: No. Unfortunately, we haven't reached that point yet. Technology in the artificial intelligence arena still is in its infancy. Users do need to be trained to use end-user computing tools in order to learn syntax and to become familiar with integrating these tools, but they shouldn't have to be trained to think like a programmer. And it shouldn't take months for them to become proficient. Think of it as the difference between being trained to operate a stereo system and being trained to repair or alter that stereo system.

Q: So your interest in end-user computing began during the early 70s. How did that interest evolve into the founding of IMACS Systems Corporation?

A: During 1976, I worked as a consultant on a project to design a fully integrated system for an oil services company that had purchased an HP 3000. Based on my background, I approached that development from the end-user's point of view. The geological, technical and accounting information that an oil company is required to track is extremely complex and typically must be shared among many different departments.

I realized early that the best way to fulfill my customers' requirements, not only at that time, but over the course of years, would be to start by developing a data dictionary that would describe this information at the lowest level, the data element, and build on that to describe data sets and the relationship between those data sets.

Now don't forget that this was 1976. IMAGE was available at the time, but no data dictionary was available.

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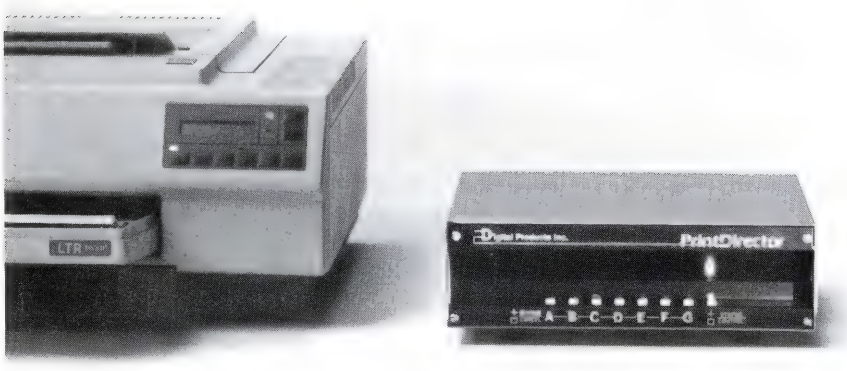

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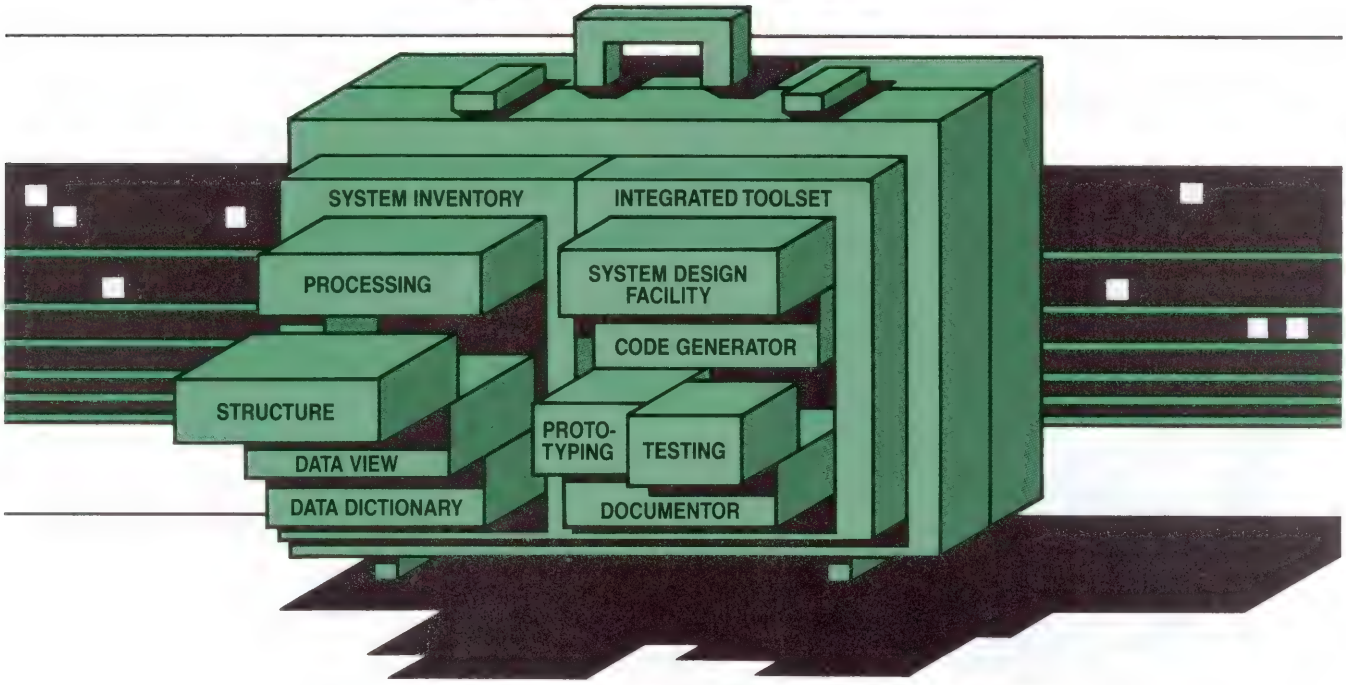

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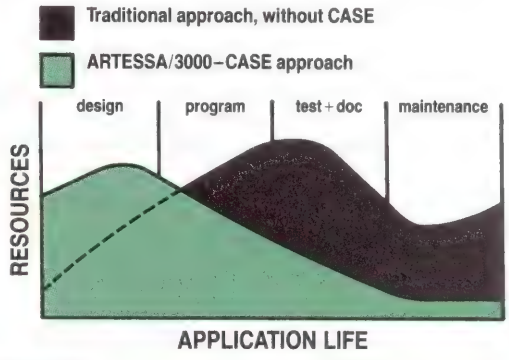

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grammers and users to access that data dictionary. IMACS Systems Corporation was founded in order to further develop and market those tools to users of HP 3000 computer systems.

Q: When did Hewlett-Packard become interested in your products?

A: It was in early 1980. Hewlett-Packard recognized that in order to compete effectively against IBM in the minicomputer market place, it needed to offer its potential customers a data dictionary and system development tools.

In April 1981, I signed a contract with HP, which gave them development and marketing rights to what would become known as the "Rapid" family of products. These included Dictionary, Transact, Inform and Report.

I then worked with Hewlett-Packard through 1981 and into 1982 to further develop the product features, packaging and training materials.

Q: I've heard that the Rapid products are no longer considered to be at the forefront of computing tools on the HP 3000. Is this your perception too?

A: Yes. Unfortunately, with HP's tremendous growth at that time there was inadequate field training and the development team was broken up by several physical relocations of the project. As a result, very little development work has been done on the Rapid products over the last six years, with the exception of Dictionary, which was assigned to a separate division. But readers should remember that, in their time, the Rapid products were very much the leading edge in software technology. If HP had chosen to keep pace in the development of those products, they still would be at the forefront today.

Q: Was it during the early 1980s that you began developing the DataExpress family of products?

A: Yes. I was still very excited about providing end-users with computing capabilities that they could understand and use, and I knew we weren't there yet with the Rapid products. I wanted to focus on access to information on demand, while enhancing the security and providing interfaces to other software products that my potential customers already had invested in.

Q: Why did security need to be enhanced? Doesn't IMAGE already offer a wide range of security?

A: There were two reasons. First, IMAGE is renowned for many things, including security available at the item, data set and database levels. While these levels of security may be comprehensive enough for MIS departments developing

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programs for use by users, they are not adequate when you make data directly available to users. Programmers can impose an additional level of security through the use of passwords.

I wanted to allow MIS to define security based on the needs of individual user departments and for different levels of users at the data dictionary level. A data item may be available to a user in one data set, but not in another, so it was necessary to allow security by field.

Furthermore, a user may have limited access to records within a data set based on the value of a field. For example, an end-user in the Seattle branch may have access to sales records for the Seattle area only. Today, DataExpress offers these two additional levels of security.

A second reason for enhanced security is that, in many applications, some portion of the data resides in MPE files or KSAM files. When you use DataExpress, the same security is available in all types of file systems on the HP 3000.

Q: Why is interfacing with other tools so critical?

A: Companies are tired of investing in software and hardware only to find that, in order to make use of some other tool that's important to its success, they must start from ground zero. Not only is this costly, it's frustrating to MIS departments that have worked hard to implement solutions for their end-users.

Q: What types of hardware and software does DataExpress interface with?

A: There are many. Foremost among them, I suppose, is the interface to the PC. We talked earlier about the concurrent development of PC technology and end-user computing tools. In developing DataExpress, I considered the ability to download information to the PC to be of great importance. I had seen too many secretaries typing information from hardcopy reports printed on the 3000 into PC spreadsheets, so I enhanced DataExpress to make use of Walker Richer & Quinn's "Reflection" software to facilitate the downloading of data in PC formats.

In the software arena, we interface with a variety of products including Cognos' PowerHouse data dictionaries, HP's Dictionary/3000, Omnidex and Relate 3000. We have additional interfaces planned for release over the next 12 months.

Q: Let's get back to user training for a moment. What kind of training do you recommend to customers who use your end-user computing tools?

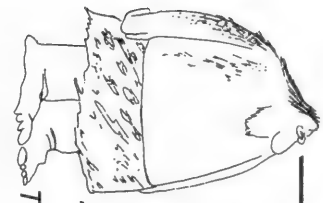
A: Training is a very important issue in any environment. It is also a very complex issue. If companies remained static in terms of their personnel and end-user computing requirements, it would be very simple. You simply would train your people to use the tools at hand for the needs at hand and that would be that.

But that's not reality. Reality is that requirements and personnel change. Based on this reality, I recommend an approach that is called the "Information Center." Ideally, this is a physical place that users can come to and learn about the end-user computing tools available to them, including PCs, PC software and mainframe access software.

Tutorials should be available to step users through the use of these tools. In addition, there should be an employee assigned to assist users and encourage them.

I realize that a physical "Information Center" is not practical for all companies. The cost of the additional equipment and space may be prohibitive. The most important components of the "Information Center" are the training program, which consists of a predefined set of tutorials and materials to guide the user through the learning process, and the assistant to guide and encourage them. Many users (especially those who have never used computer systems before) still are intimidated by computers.

I believe that the most prevalent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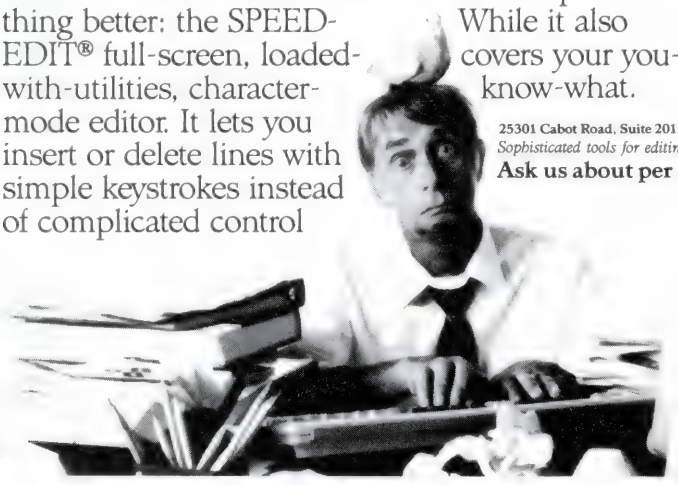

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reason for under-utilization of computers by management level users is that they don't want to look foolish or incompetent. A person specifically assigned and trained to be their "computer mentor" can alleviate a lot of those fears.

Q: Who should be assigned to this mentoring task?

A: Ideally it should be a user who has a demonstrated flair for using computers.

Q: Why not someone from MIS?

A: I believe this person needs to be able to speak the user's language. He needs to be focused on the business problems more than the features of the computer systems themselves. This will allow for better communication and empathy with the end-user who is going through the learning process. The mentor then also can serve as an example of someone with little or no computer background who has had success in using computers.

Q: In closing can you tell us what you see as the future in end-user computing?

A: End-user computing is one of the most important areas of development today. Hewlett-Packard clearly has demonstrated its commitment to this area over the last few years, through its own "Personal Productivity Center" focus. As HP continues to build more powerful mainframe computers, it also will continue to expand its product offerings in the personal computer area.

I believe that over the next few years we will continue to see the trend towards the mainframe computer being used to compile, store and process corporate information, and PCs being used to manipulate and present information of interest to specific users. It is a very exciting time in our industry, because at last we are basing our strategies on the needs of our most important customers — corporate decision makers. —*Kathy McKittrick is president of McKittrick Associates, Aurora, CO.*

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Dr. Joel Schwartz

The problem of producing high-quality 300 dpi pages at an affordable price was addressed by Hewlett-Packard in 1984 with the introduction of the HP LaserJet. By plugging in solid font cartridges or downloading soft fonts (bitmaps of characters stored on a disc) the style and size of the print could be varied within a document.

Unfortunately, with invention comes discontent. If you selected the cartridge route, your fonts were available immediately, and the printer's memory or your print buffer's limitations were not a hindrance. You, however, were limited by the contents on the cartridge, which usually carried one or a limited variety of two fonts in a narrow range of point sizes. If you selected the soft font solution, you had more of a variety of fonts and a greater range of point sizes. Each time you turned on your printer, however, you had to wait (usually minutes) while you downloaded the fonts you wanted from your disc into RAM, often finding that the amount of RAM available was too little to hold all the types and sizes (especially the larger ones) you wanted.

A third solution was the PostScript printer. With its completely new Page Description Language (PDL), the problems of limited fonts with fixed point sizes along with inadequate RAM was solved. Its two drawbacks were speed and expense.

Enter the CAPCard, a laser printer controller card from LaserMaster. Boasting the ability to scale fonts-on-the-fly in unlimited point sizes, in any rotation, at any oblique angle quickly, as well as fast full-page graphics, all for a reasonable cost. Too good to be true? Let's see.

Before I answer, allow me to specify my qualifications for testing this product. I am neither computer trained nor do I work in a computer related job. I am, however, computer friendly and expect the computer and software I use, as well as the support I seek, to be equally friendly to me.

For me to consider a product worthy of my use or the use of others, the hardware and software must be easy to install, and the support has to be on my level and specific to my problem.

The LaserMaster package consists of hardware (the LaserMaster CAPCard, an I/O slot card, six feet of phone jack-ended cable) and software (LM DoubleJet, Microsoft Windows/PageMaker driver, Ventura Publisher driver, LM Fonts 13 and 35, LM-Font compiler). The hardware installation is quite easy. The CAPCard slides easily into an open slot inside your computer and the I/O slot card does the same in its appropriately marked spot in your LaserJet II.

The software installation, which by the way can be done only if you have a hard disc with at least 4 MB of space to spare, is a little bit more tedious, but remember, it only has to be done one time. The LM DoubleJet software is copied followed by the Ventura or PageMaker driver discs. Next, you copy the Fontware outlines to your hard disc, and from the list of outline fonts (OTL), you select those that you want to compile as ready made outline fonts for quick downloading and those that you need as screen fonts.

LaserMaster recommends compiling 12-point and smaller fonts as outline fonts and scaling the larger sizes on the fly. Depending on the number and point sizes requested, the speed of your computer and whether you have a math coprocessor or not will determine how long your computer will be tied up. The first

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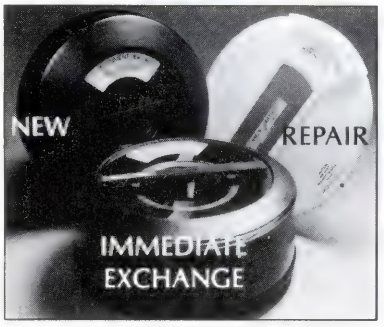

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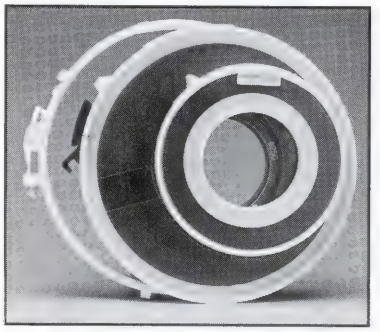

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PRINTER CAPABILITY PAGE

(Print This File On Your Printer To See What You Get)
This page will help you understand the capabilities of your particular printer. It illustrates the use of white text on black background and other features which *not* all printers have.

Reverse Text

The box to the left should be black with the words "Reverse Text" printed in white on top of it. If your printer cannot print white text on a black background, you will see only a black box.

Text Graphics

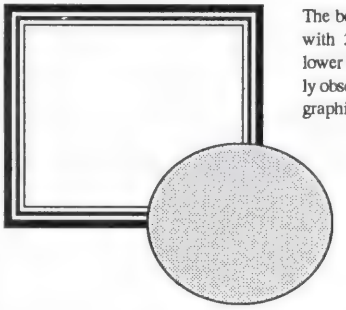
The word "Under" from the phrase "Text Under Graphics" should be completely obscured by the opaque circle on top of it.

Text Under Graphics

The word "Under" from the phrase "Text Under Graphics" should be partially obscured by the transparent circle on top of it. On PostScript and some other printers which cannot handle transparent graphics, this picture will look identical to the one directly above.

6,8,9,10,12,14,18,24,36,48,72

The numbers to the left represent a range of point sizes between 6 and 72 point Times (or Dutch). If the size is not available in your printer, the number will print in the nearest available size.



The box outline to the left is drawn with 3 black ruling lines and its lower right hand corner is completely obscured by an opaque circle (i.e., graphics).

This ruling line around the page goes right to edge of the physical page. When printed, the white space outside the ruling line represents the "dead" space to which your printer can't print.

Figure 1: The "Printer Capability" page is a demonstration page from Ventura, a product of Xerox Corporation, Rochester, NY.

time I did it, using a NEC 286 running at 12MHz and no math coprocessor, it took me almost 14 hours. The second time, using a NEC 386, no math coprocessor and eliminating international characters, it took me five hours. If you are using Ventura, following compilation, the fonts must be merged into the proper Ventura width table (WID Table).

My first contact with the support services came after the font installation. Whereas all the fonts worked correctly, the Dutch and the Swiss fonts (both resident with the Ventura program) did not. I was told that for some reason (unknown to civilized man) if these particular fonts are merged directly into the existing Ventura WID file (OUTPUT.WID), they compete with each other and cancel each other out. If, however, you compile these fonts separately and copy them into their own WID file and then merge this file into OUTPUT.WID, everything will work fine. It did.

My second contact with support

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came when garbage appeared on my screen or Ventura crashed after asking for a larger point size. I was instructed to delete all the *.INF files as well as the memory overflow file, and again, the problem was solved.

Each time and subsequent times afterwards, I found the support to be helpful, educational and knowledgeable about their product. They talked on my level and never made my questions seem foolish. By the way, they did not know at any time that I was doing an article on their product (for a magazine).

The Test

Once up and running, I tested the product using Ventura Publishers PaintBrush on my NEC 386 in conjunction with an HP LaserJet printer loaded with the CAPCard and with an AST PostScript printer and an HP LaserJet+ without the CAPCard. I ran the tests using the pages shown in *Figures 1, 2* and *3* and a 12-page newsletter. The "Printer Capability" page and the "Ventura Scoop" are demonstration pages from Ventura. *Figure 3* is an 8 × 10 300 dpi graphic of an eagle. My results are shown in *Table 1*.

TABLE 1

Test Graphics	LaserJet w/CAPCard	AST PostScript Printer	HP LaserJet+
"Capabilities Page"	15 sec.	30 sec.	74 sec.
"Ventura Scoop"	40 sec.	3 min. 15 sec.	3 min. 55 sec.
Newsletter	1 min. 5 sec.	3 min. 40 sec.	4 min. 45 sec.
Eagle	10 sec.	4 min.	8 min.

Printer capabilities were significantly improved using LaserMaster's CAPCard.

The 12-page newsletter was a two-column document with some shaded boxes and scattered 30-point headline print.

There is no question that with the CAPCard text and graphics are printed faster. It also should be mentioned that the HP LaserJet and the PostScript printer I used could not handle the special transparent graphic effects on the "Printer Capability" page that the CAPCard could.

Speaking of special effects, they are a snap. Using a special pull-down menu installed into Ventura or outside of Ventura working directly with the card itself, special effects, such as graphic fill patterns, text fill patterns, outlined text, rotated text, transparent text over or under graphics and point sizes up to 750 points, are easy and can be saved in files for future use.

LaserMaster claims it runs equally well with PageMaker/Windows, with AutoCad and with multiple workstations in a networking setup. I did not have the capabilities to test these options for this article.

As far as cost goes, the hardware costs $1,290.00, the LM DoubleJet software, Ventura drivers, and PageMaker/Window drivers are free and the Memory/Font Kit (compiler, outline driver, firmware .5 MB RAM, 13 bitstream outlines and documentation) is

Ventura Scoop

SPECIAL EDITION — APTOS POST TYPOGRAPHY — MARCH, 1987

Xerox Shows Off Ventura Publisher at Conference

BEVERLY HILLS (VP) — Xerox Corporation has introduced version 1.1 of its first electronic publishing software product that runs on industry standard personal computers. Xerox chose the Seybold Conference to announce the price and availability of the new revision to the industry standard software package. Conference attendees were impressed by the eighty-one new features, all of which were added without compromising the speed of the product and its depth of functionality.

Product now widely available.

The Xerox Desktop Publishing Software Series: Ventura Publisher Edition is available through Xerox authorized dealers (including ComputerLand, Microage, and Pactel), and the Xerox Business Software Center via (800)-822-8221, and the Xerox general line sales force. Commented one observer, "This breadth of distribution represents Xerox's commitment to the mainstream of the PC-based market."

Ventura Publisher Edition allows personal computer users to merge text and graphics to create publishing-quality documents, such as newsletters, technical manuals, books, bids and proposals, that might otherwise be sent to a print shop or typesetter. The package runs on the Xerox 6065, IBM PC/XT, IBM PC/AT, and other PC compatibles. It supports popular laser printers, including the Xerox 4045, the Apple LaserWriter and the HP Laser Jet.

Pioneers in the field

"As one of the pioneers in the field of electronic publishing, Xerox fully understands users' requirements for a desktop publishing software product," said James N. Brown, vice president, office systems

Shuttle

This is an example of an AutoCAD DXF file converted using the external DXF converter, and then brought into Ventura Publisher using the Load Text/Picture function.

Version 1.1 Redefines Desktop Publishing—Again

MORGAN HILL (VP) — Xerox Ventura Publisher Edition version 1.1 has added new meaning to the term "Desktop Publishing." Before the introduction of Ventura Publisher Edition, desktop publishing referred primarily to advanced drawing packages that were extended to handle different text fonts.

These types of packages were characterized by a hand-intensive approach that attempted to mimic what graphic artists and typesetters were used to doing using the personal computer screen as an electronic paste-up board. While this approach was easy for artists to pick up, it did not result in much time-saving because the user was still faced with the drudgery of hand-adjusting each piece of text on the page.

Fortunately, the software developers at Ventura Software Inc. recognized this and adopted a **style sheet** approach. In the same way that a spreadsheet defines the rules for a complex set of repetitive calculations, a Style Sheet defines the rules for complex layout. Once these rules are defined, non-typesetters can quickly achieve typesetter-quality results simply by applying or tagging each paragraph as a Headline, Sub-Head, etc. Style sheets let even non-typesetters achieve typeset

Illustration of nozzle produced in AutoCAD. Line-Art can also be brought in from Mentor Graphics EE CAD, DXF compatible CAD packages, Lotus 123, GEM Draw or GEM Graph. Images can be brought in from PC Paintbrush, GEM Paint, MicroTek, Dest, and other scanners.

This complex page, formatted with Xerox Ventura Publisher, uses many fonts used in combination with graphics. Some printers cannot print everything on this page, e.g. the headline, which is 72 point, will only print on PostScript printers.

Figure 2: The "Ventura Scoop" is a demonstration page from Ventura.

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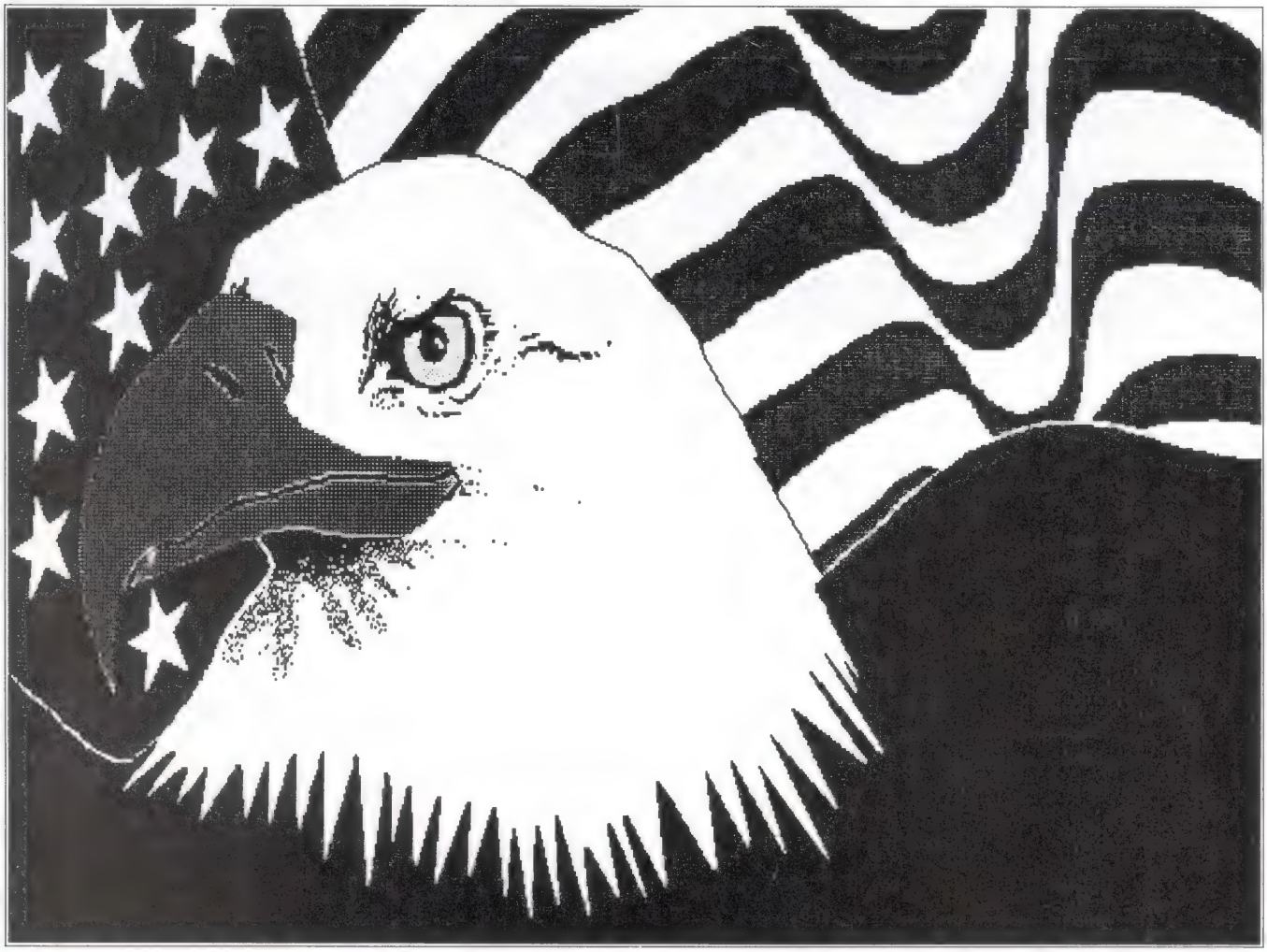

Figure 3: The "Eagle" is a 300 dpi graphic.

CAPCard
LaserMaster Corporation
7156 Shady Oak Rd.
Eden Prairie, MN 55344

Supports IBM PC/AT/XT and compatibles.

Supports all Canon-based laser printers including HP LaserJet Series II, Canon LBP-8-II, A1/A2 and LBP-CX, Apple LaserWriter, Cordata and QMS Kiss.

Includes 1.5 MB of dedicated printer memory.

Price: $1,290
CIRCLE 300 ON READER CARD

$495.00. The Memory/Font Kit Plus is the same as above plus 22 additional fonts for $695.00. If one were to get the total Plus package, the cost would be $1,985.00. If this is added to the cost of a LaserJet+ (approximately $1,700.00) the total cost comes to $3,655.00, making it about $350 to $2,300 cheaper than a PostScript printer setup.

In all, this product is superb. It does everything it claims to do quickly, cheaply and efficiently. Best of all the support is reliable, knowledgeable and effective. I would recommend this product to those who dabble in desktop publishing for fun or for real.

But Wait; There's More!....

The new version of DJET/SST software contains even more special effects. It now is possible to change the height of text without changing the width. You also can squeeze the text just by changing the percent under the stretch column. It is easy to rotate characters, oblique characters forward or backward or shear the angle of the text. By combining features, it is possible to create special effects. Even though the effects are not shown on the screen, they are easy to use and usually come out right the first time. *—Dr. Joel Schwartz is a physician and best-selling author of children's books.*

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CIRCLE 148 ON READER CARD

COMPUTER MEMORIES FOR SALE

Special thanks to this publication, Scitex America Corp. (color separations), Grafik Communications, Ltd. (design), David Sharpe Studio (photography) and VM Software, Inc. (poster).

A GLORIOUS NON-RACE

High Technology Spawns America's Cup Yachts That Sail Faster Than The Wind That Propels Them

YACHTING

Dennis J. Parker

"Let's go see if we can find the apples and oranges, son." The toddler probably didn't understand the analogy made by his father, but it was one of many ways that this America's Cup race would be described. Everyone knew it was a mismatch, but it didn't deter the thousands of people who came to San Diego to see history being made.

Local patrons of the Kona Kai Club, on Point Loma's Shelter Island, mingled with their out-of-town visitors, some of them from New Zealand. At a nearby dock, the 12-meter Stars & Stripes '87 rested in peace, its work done after winning the Cup back from Australia one-year ago. But now it was time for America's Cup XXVII, the 1988 version, featuring New Zealand's "KZ-1" monohull and the "US-1" catamaran.

In most sports, the state-of-the-art is advanced through changes in designs for racing or other competition. Sailing is no exception; computer-aided high technology has spawned America's Cup yachts that sail even faster than the wind that propels them.

This would be a race of many records — the first solid wing-shaped sail, and the first catamaran ever to compete in an America's Cup race. New Zealand's KZ-1 carried three HP computers on board, perhaps the greatest amount of computer power ever used aboard an America's Cup yacht.

According to Richard Morris, "New Zealand" navigator, "We use six crew members to operate the computers on board. Obviously, the HP computers are essential because we must justify every ounce we carry." Computer power played a major role in designing and racing both boats, and Hewlett-Packard was the $1 million single-vendor solution.

Here is an overview of the Hewlett-Packard applications used in the race:

- *Both boats were designed with HP 9000 engineering workstations, using computer-aided design (CAD) software.*
- *An HP-71 handheld computer interfaced to a satellite navigational system was used aboard the U.S. catamaran to keep the catamaran on course.*
- *New Zealand's 132-foot boat carried two HP Vectra PCs, an HP 9000 engineering workstation and an on-board generator to support them. A full day's worth of data could be downloaded to a dockside computer lab for analysis via an umbilical cord plugged into the on-board systems.*

According to Bruce Farr, lead designer with the New Zealand team, "Computers have had a huge impact on yacht design, particularly during the past five to 10 years, with the advent of more reasonably priced and user-friendly systems. Without these systems, we couldn't have designed the New Zealand at this level of sophistication in such a short period of time."

Design And Velocity Testing

Both the U.S. and New Zealand used computer-aided velocity-prediction programs to simulate expected performance. This eliminated the time-consuming process of testing models in a tow tank, thereby shortening the design cycle. New Zealand tested every aspect of final hull design with the velocity-prediction program and used computational-flow analysis to develop the mast and rig. The final shape of the hull was developed with the HP 9000 running a software design package called "Fast Yacht."

According to Farr, "We generated the actual shape of the New Zealand on the computer screen. This allowed us to produce quickly and modify different shapes faster than ever before and to evaluate carefully various hull design

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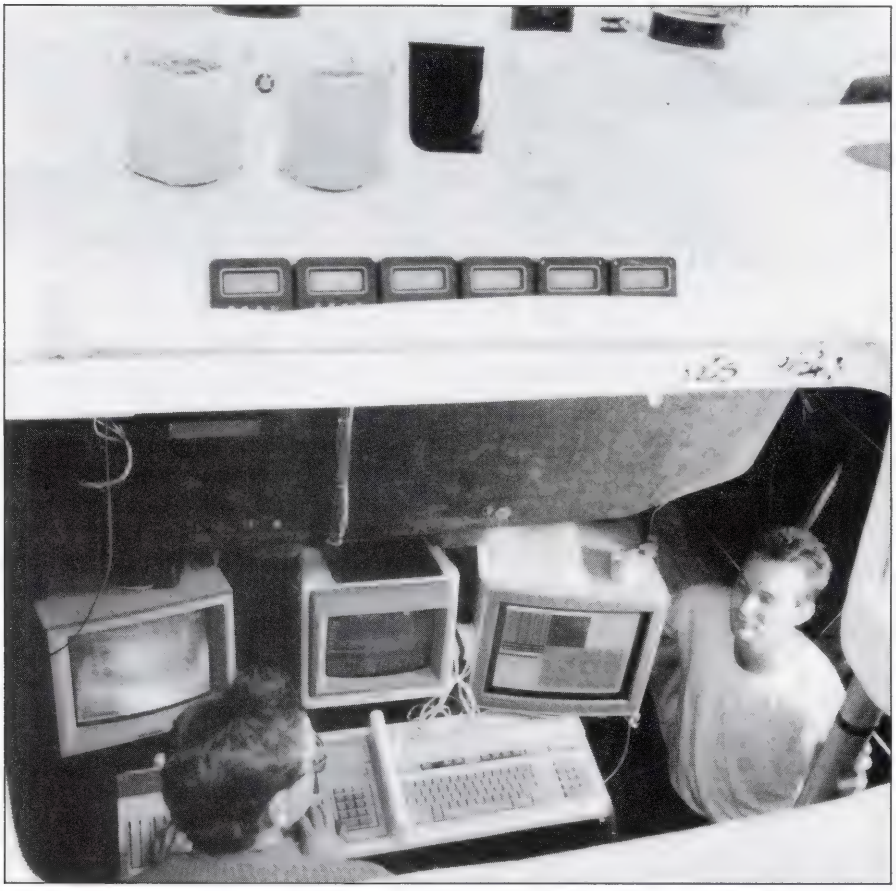

Three HP computer systems filled the cockpit of the "New Zealand." The computers were used to monitor and display information on boat performance, sail shapes, stress on the mast and rigging and for tactical navigation.

candidates. After the final shape was completed, the computer also let us produce more accurate renderings by plotting out full-sized drawings for the boat builder."

Full-sized drawings of keel and rudder sections also were generated, and the Fast Yacht software even helped the sail designers to "fly" theoretical sail shapes in computer-generated "winds" (derived from weather simulation programs) to determine optimum sail design. As a result, it took only seven months to convert KZ-1 from concept to completion.

The "Stars & Stripes" team also used the HP 9000/Fast Yacht combination to design the catamaran hull in record time. Enhancements to the Fast Yacht software, written by Chris Cressy of Science Applications International Corporation (SAIC) (Annapolis, MD), gave Fast Yacht, working with HP ME-10 CAD software, three times the functionality of the original version. The American designers also used finite-element modeling to subject the design structure to a wide range of loads and stresses, arriving at a hull design strong enough to withstand expected conditions, but with minimum weight.

On The Water With New Zealand

SAILSCAN. An HP Vectra personal computer aboard the New Zealand boat was part of a Sailscan system, which used four miniature TV cameras mounted at the top of the mast to sample sail position, shape and twist at one-third second intervals. The HP computers calculated sail shape automatically by examining the horizontal black stripes that traverse the width of the sail. This data was used in real-time to help trim the sails for optimum performance. Actual sail shapes were compared with a library of "target" shapes stored in the computer. The target shapes were known to give good performance under given conditions and gave the trimmers — by way of a computer screen — a model to match.

Strain Analysis. A second HP Vectra PC controlled the on-board rig-analysis system, which collected information from more than 140 strain gauges located throughout (and even imbedded within) the mast, rigging and hull. Seven miles of wire was used to connect the gauges, and four men monitored the data being collected at a rate of 50 times a second. The data gathered was useful not only to avoid over stressing equipment to the breaking point, but a careful analysis of the distribution of stress among various points was used to rate successful combinations of sail configuration for a given velocity and angle of wind.

Performance-Evaluation And Tactical-Navigation. An HP 9000 Model 350 engineering workstation controlled both the performance-evaluation system and the on-board tactical-navigation system. Interfacing with Brooks and Gatehouse instrumentation, the system collected, analyzed and displayed in real-time a wide range of performance information such as wind speed, direction and actual boat speed. This information was made available to the crew by way of on-deck digital displays that showed the boat in relation to start/finish/rounding marks. The data also was logged for on-shore analysis at the end of the race.

The sailing history assembled from the log enabled the crew actually to sail the boat against itself in computer simulation. Named "Mismatch" by Tom Schnackenberg who programmed it into an HP Vectra, the system also gave the Kiwi crew an advanced look at what it would be like to race against the catamaran. The performance of "Stars &

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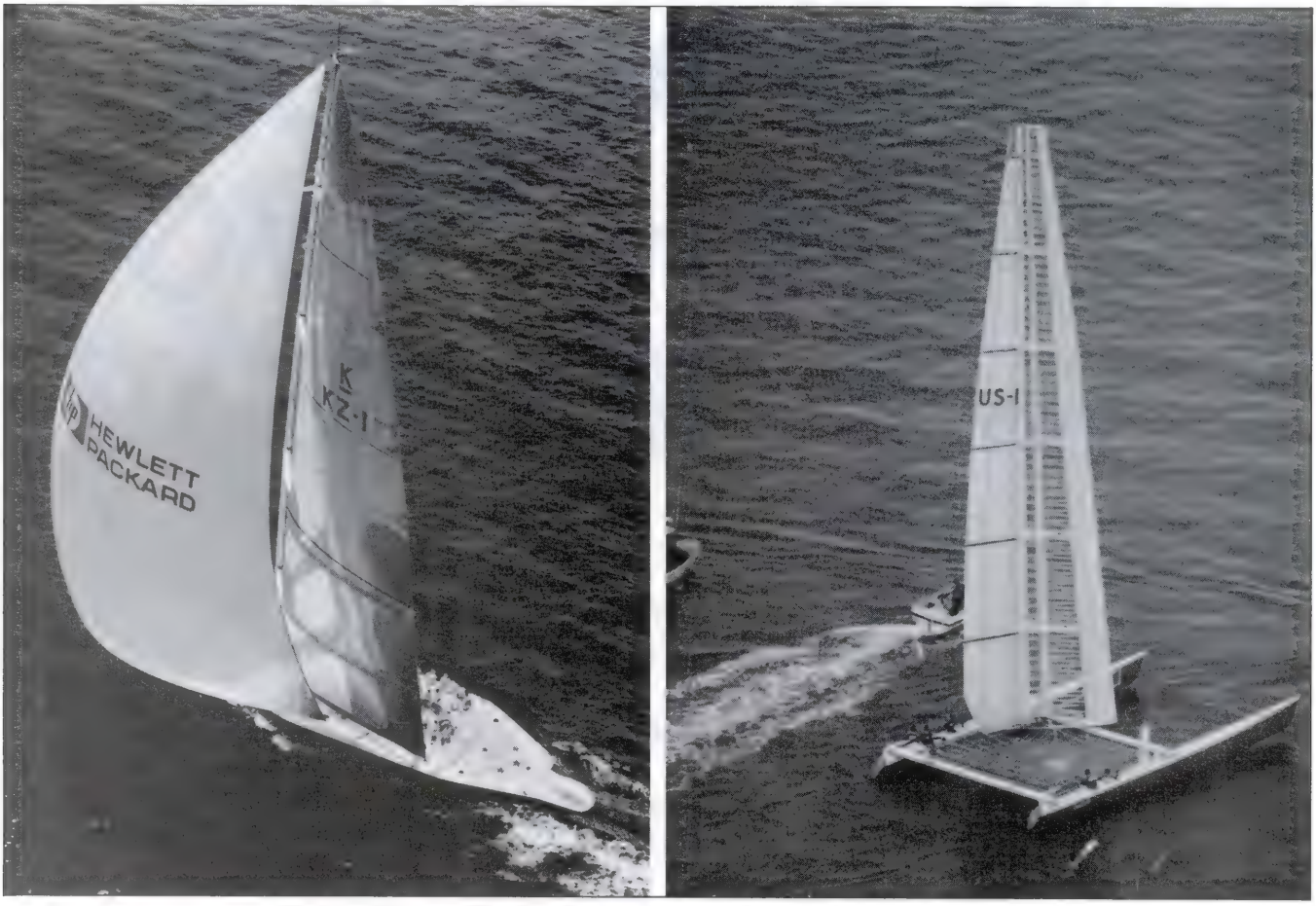

Each craft is considered to be the fastest and most technologically advanced racing yacht of its type.

Stripes" was measured regularly by the Kiwis under a variety of conditions — tacking, rounding marks, maximum speed downwind — and the information fed into the computer. Adding this data to that of their own boat, New Zealand could race the two boats on the computer, trying out various tactics and sail configurations.

According to Morris, "This is particularly useful during a race. We can put a range and bearing device on another craft and then know whether a planned move will put us behind them or ahead of them. We can calculate unit target numbers that tell us how far it is to the mark, how long it will take us to get there and how long it will take to do the maneuvers. We can determine when to change a sail or make other adjustments to optimize our efforts."

The tactical-navigation system kept track of the location of the opposing boat in real-time and enabled the navigator to do a "what if" analysis of a planned maneuver.

Schnackenberg used an HP Vectra PC to fine tune the Kiwi's sails. Using information gathered after a day of sailing, he was able to make small modifications to the sail's shape to suit prevailing conditions. Not only could the sails be "tweaked," but new sails could be crafted between races.

A Glorious Non-Race

After seeing the Kiwi boat up close and examining the performance statistics of both boats, in my opinion, there were no losers. Unfortunately, political considerations and legal interpretations kept it from being a true match race. But each yacht, within its own class, pushed out the edge of the performance envelope, as if to defy nature. But stay tuned, because this is but a preview of what lies ahead in 1991, when a host of nations converge on San Diego for "friendly competition," to quote the Deed of Gift. I have a feeling that Hewlett-Packard will be there, too. — *Dennis Parker writes technical manuals for Hewlett-Packard. When not writing, he usually can be found sailing his 30-foot Hunter on the San Francisco Bay.*

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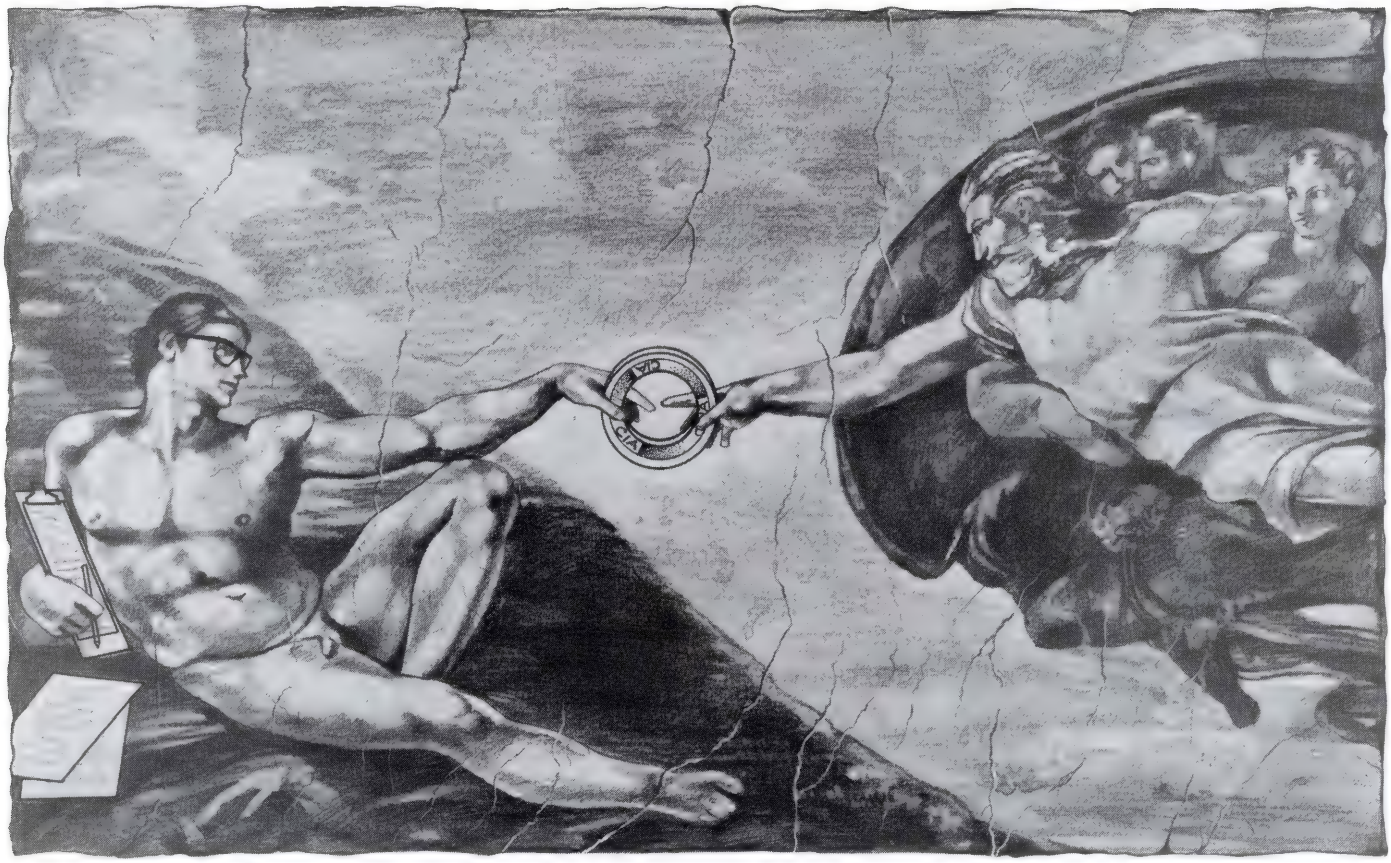

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CIRCLE 108 ON READER CARD

STORAGE

Brian Fitzgerald

Cache Storage Comes Of Age

In the constant battle to improve computer response time, many HP users have focused on faster CPUs. While 15 years ago this approach may have been effective, changes in both technology and the way computers are used, have meant that many HP 3000 users have not succeeded in making the machine faster simply by installing a bigger engine.

To understand why a bigger CPU doesn't make the machine faster, it's important to study these changes in computer use and technology as they have occurred over time.

A Historical Perspective

Fifteen years ago computers were still toys of the technical department. They were used primarily for performing complex operations (calculating lunar orbits) on relatively small amounts of data. The work they did was batch oriented, rather than interactive, and they had very few users.

However, as these machines moved from the lab to the office floor, a lot of things happened. First, the jobs they performed became much more varied, usually involving many people and a combination of interactive and batch operations. Second, most of the work performed by computers changed from very complex operations on relatively small amounts of data, to doing rather simple work on very large amounts of data. An example of the later would be Citibank doing invoices for half a million customers.

While applications of computers were evolving, most of the critical technology that made them run was improving very rapidly. Over the past 20 years, for example, CPU performance has grown almost 60-fold. During that same period, data storage (now primarily Winchester disc) has grown 100 times. However, during the same 20 year period I/O transfer rates have grown only four times. So, while computers now have little difficulty either storing sufficient data or processing it when required, they have a very difficult time getting that data from storage to the CPU with any kind of speed. They have an I/O bottleneck.

One obvious question arises: If CPU performance and storage capacity could be improved so dramatically, why have access times remained so poor?

The answer lies in the fundamental difference between electronic and magnetic storage. Electronic (RAM) storage has access times measured in nanoseconds (billionths of seconds). Magnetic (disc) storage, with its moving heads and rotating platters, has access times measured in milliseconds (thousandths of seconds). By using smaller discs with faster rotations, manufacturers have been able to improve performance somewhat. However, even as they work to put higher densities of data on platters, they force the heads to work harder, thus eliminating many of the benefits of faster platter rotations. The mechanical actions required in the operation of magnetic discs put basic limitations on their ability to access and transfer data at high speeds.

Caching techniques try to guess which data will be needed next by the CPU and store that data in electronic storage until needed.

Cache Storage

To bridge the performance gap between the CPU and disc storage, manufacturers have developed another category of storage called cache.

Caching techniques try to guess which data will be needed next by the CPU and store that data in electronic storage until needed. Because of the higher speeds of electronic storage, the access times for that data are minimized, thus improving availability of the data to the CPU. This cuts down on wasted CPU resources and improves performance.

HP's MPE caching uses this approach. In MPE caching, a portion of main memory is set aside for caching purposes. MPE uses locality to anticipate data needs. When a certain piece of information is requested from disc, all the data around that piece is taken with it and stored in cache. This approach assumes that local data stands a better chance of being requested.

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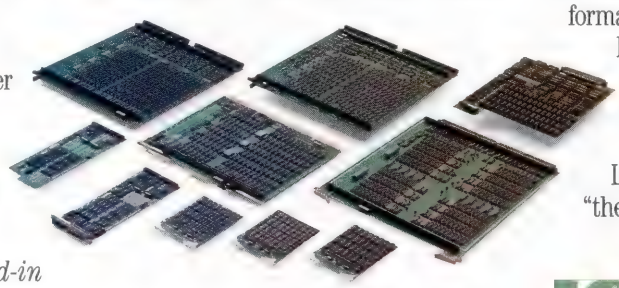

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CIRCLE 204 ON READER CARD

As the cost per MB of electronic storage continues to fall, solid state disc storage is making an appearance in the storage hierarchy as well.

disc vendors have begun to include cache on disc controllers to improve performance. In the HP 3000 market, disc subsystems use both write cache (storage data to be written to the disc) and read cache (storing data for the CPU).

Write cache is effective because it allows data to be transferred from the CPU to the disc at very high speed. As soon as the data is transferred to cache, the controller tells the CPU that it has finished the write. This allows the CPU to go on to other activities while the controller then writes the data from cache to disc at the slower speed of the disc drive.

Read cache works in the same manner as MPE caching and allows main storage otherwise required for caching to be freed up for use by the processor. With read caching the user gets the performance benefits of caching and additional main storage.

Solid State Disc Storage

As the cost per MB of electronic storage continues to fall, solid state disc storage is making an appearance in the storage hierarchy as well.

Solid state disc consists of large amount of RAM storage (over a gigabyte in some systems) used to emulate a magnetic disc. Solid state disc is best used with performance-oriented files (database indexes, for example) because they have none of the head seek or rotational latency associated with magnetic discs. Users end up with a very efficient cache device when they store frequently accessed files on the solid state disc.

The side benefit of these approaches is that they tend to be much less expensive than CPU upgrades. And, because they address the heart of the problem, they usually can be much more effective at improving overall system performance.

As the prices for RAM devices continue to fall, both vendors and users will look for new ways to use these high-speed, highly reliable devices in place of magnetic disc drives. Because improvements in disc drive capacity are slowing down, while RAM capacity continues to improve, many estimates actually have RAM devices costing less per MB than traditional disc drives as early as the year 2000. But long before then, the new uses for electronic storage will have gone a long way toward eliminating the largest imbalance remaining in today's computer systems — getting all that data to the CPU. *—Brian Fitzgerald is manager of information services for EMC Corporation, Hopkinton, MA.*

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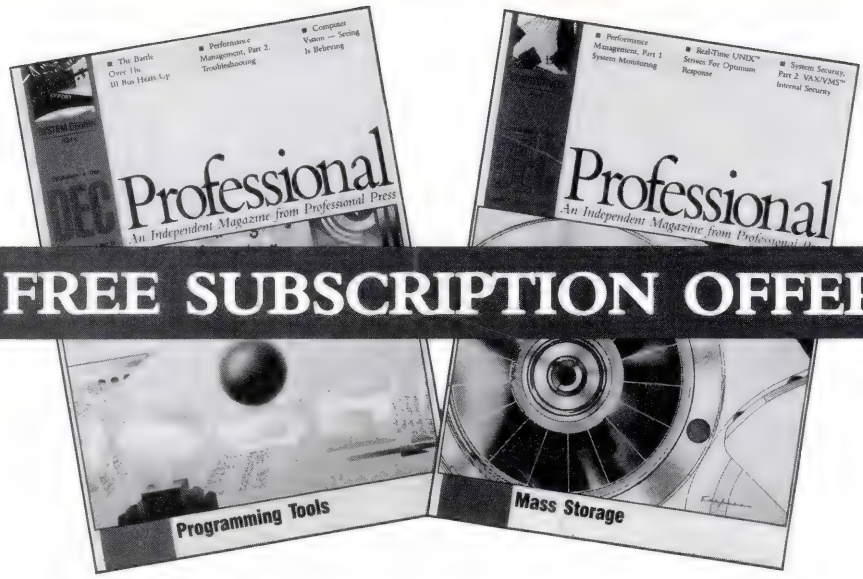

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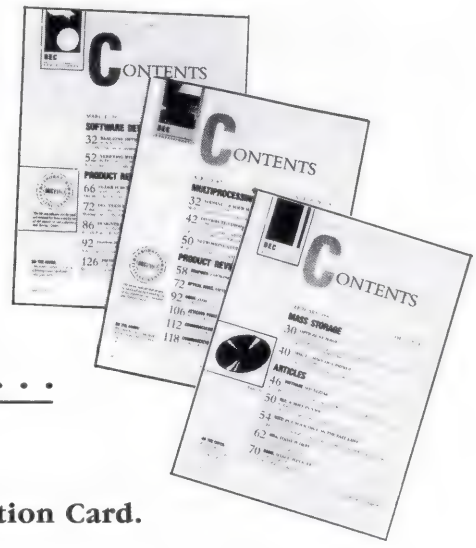

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WORKSTATIONS

Bob Youngquist

QMS JetScript

One of the smartest moves Apple Computer has made to date was the introduction of the LaserWriter. It did more than provide the Macintosh with a sorely needed output capability; it helped establish an entirely new marketing direction for its entire line of computers. High resolution monochrome output was the perfect compliment to Macintosh's monochrome graphics capability. It made Apple the supplier of choice in the developing field of desktop publishing.

What made the LaserWriter stand out in a crowd of laser printers was the Adobe Systems' PostScript language. PostScript is a programming language like any other, except that it is designed for one limited application: describing a printed page. Like other programming languages, it serves as a go between, in this case, between the application and the nitty-gritty hardware of a raster output device. Like more general-purpose languages, it provides a level of portability. Applications do not address the capabilities of the printer directly, but rather create a symbolic description of the output. An interpreter is responsible for rendering this description within the limitations of the hardware to which it is bound. PostScript is yet another manifestation of the current trend towards hardware independence.

Hardware independence is of little value without the hardware, and a standard isn't a standard without support. In these respects, PostScript has faired well. It is supported by a variety of manufacturers and can control devices ranging from 300 dpi laser printers to 2400 dpi typesetters. In the world of laser printers, PostScript is the queen bee of buzz words. Already, a group of imitators are nipping at its proprietary heels. These challengers may cloud Adobe's profit picture, but at the same time they will reinforce PostScript's position as the industry standard page description language. While PostScript gained popular approval, (largely through Apple's efforts) HP concentrated on providing a laser printer solution to a different market segment. HP relies on its own proprietary Printer Control Language to stake out and dominate a major piece of laser printer turf.

LaserJet emulation is in every low-end laser-printer's resume these days, but it still doesn't command attention like PostScript's promise of device independence, font flexibility and high-resolution typesetter output. But, rather than jump on the PostScript bandwagon, or buck the trend by throwing its considerable weight behind a competitive language (like Imagen's DDL), HP remains on the sidelines. HP has turned to third parties for augmenting its printers' capabilities. The QMS JetScript is one of several products that provide page description capabilities to the LaserJet Series II.

Hardware

The JetScript is a two circuit board set that runs an Adobe-licensed PostScript interpreter. The main board is an IBM PC compatible expansion board. (If you don't have a PC you can't use this product.) It contains the processor (a Motorola 68000 running at 16 MHz) and memory (3 MB), which runs the PostScript interpreter. In most cases, this card has more processing power than the host computer. This may sound like overkill, but a quick survey of other PostScript devices reveals that this is standard equipment; interpreting PostScript is a processor-intensive task.

The second board in the set is an adaptor card, which fits in the optional interface slot of the LaserJet Series II. (This card set will not work with the original LaserJet or LaserJet + .) The cards are connected by a 37 pin cable. While this arrangement affords a fast parallel interface between computer and printer, it prohibits sharing of the PostScript device among multiple computers. Only the machine with the controller card may access the added capabilities supplied by this product.

Installation

To install JetScript you must have 2 MB of available disc space, an empty full-length expansion slot and an unused address for a parallel port. Most PCs come equipped with one printer port, LPT1, leaving LPT2 available for the PostScript board.

Installation of the software must be done first because two jumpers on the

TABLE I

Resident JetScript Typefaces

Times
Courier
Helvetica
ITC Avant Garde
New Century Schoolbook
Palatino
Helvetic Narrow
ITC Bookman
Zapf Chancery
Symbol
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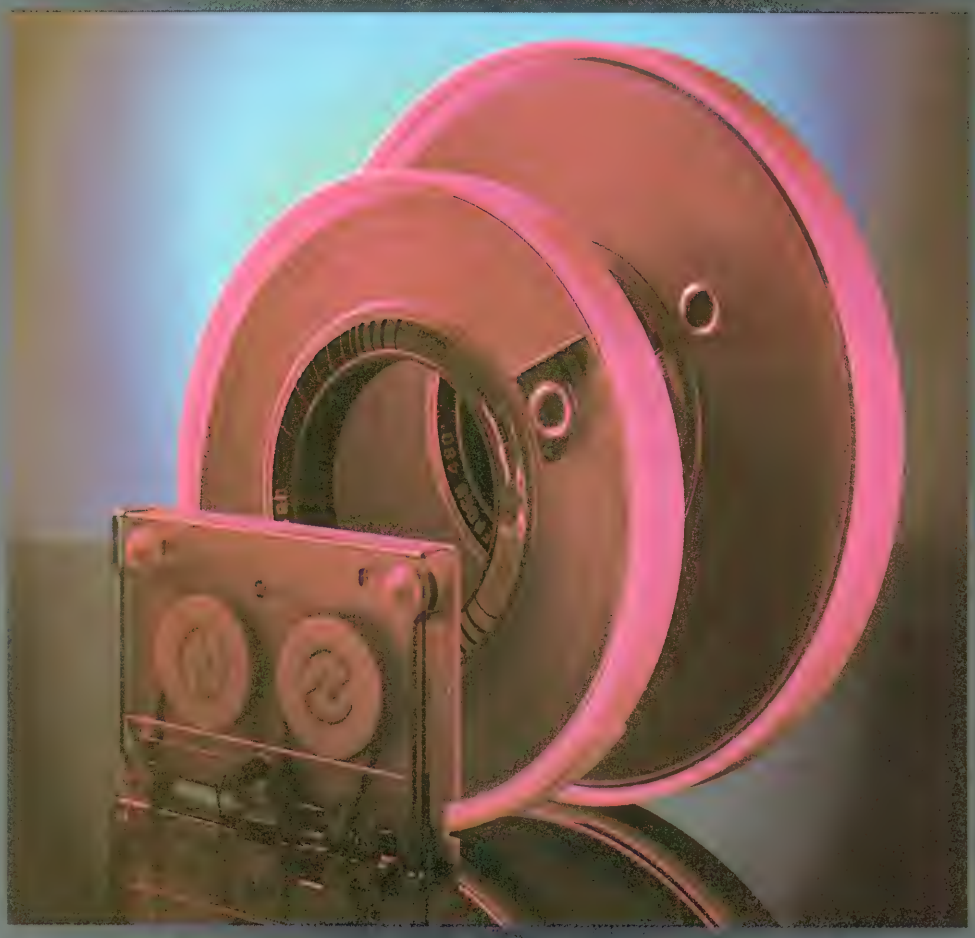

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controller board must be set to match the choice of port address and interrupt made during the installation. A program is supplied to automate installation. It checks the status of the parallel ports, makes recommendations and then instructs you on how to set the jumpers based on your decisions. A directory is created on the hard disc for the software and several files are copied to the disc. The installation program also modifies the *autoexec.bat* and *config.sys* files on your disc, but creates backups of the originals.

. . . installation takes about 15 minutes and even could be accomplished by an inexperienced computer user.

Hardware installation is straightforward. Two jumpers must be set on the controller board before insertion in a full-length PC expansion slot. The printer adaptor card is installed in the optional interface slot on the printer and is held in place by two screws.

In all, installation takes about 15 minutes and even could be accomplished by an inexperienced computer user.

Software

There are several components in the JetScript software package. A device driver, *jetscrpt.sys*, must be present to access the PostScript device as either an LPT port (the DOS parallel printer port) or as EPT (the QMS custom device driver). The two methods are identical.

Each time the host computer is booted, the device driver will be loaded automatically. However, the PostScript interpreter code is not resident on the controller board and must be downloaded in a separate initialization step. The installation program modifies the

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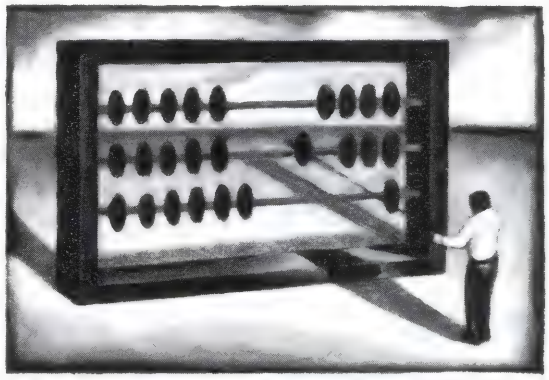

Adding it up,

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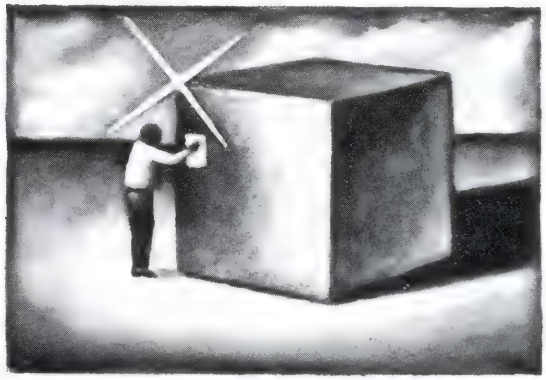

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autoexec.bat file to perform this function automatically by means of a program called *jetstart.exe*. It loads the interpreter from a disc file called *ps.zdl* into RAM on the controller board. This file is more than 800KB, and it takes 50 seconds to load on a 10 MHz AT equipped with a 28 ms hard drive.

Fortunately, the interpreter code is unaffected by a warm boot and attempts to reload the code once it has been loaded are ignored.

Each time the board is initialized it prints a test page if the printer is on. To save paper and toner cartridges the printer is best turned off during initialization.

JetSet is a utility program, which among other things gives a status report on the printer. Care should be taken when using this program; if the printer is not powered up, a request for status information will hang the printer. Both the printer and the host computer must be powered down when this occurs. *JetSet* also can be used for downloading PostScript files, for printing sample files or for using PostScript interactively, but in normal, day-to-day use there is little call for this program.

JetFonts is a program for downloading additional fonts to the JetScript card. It provides a menu of the resident fonts and any additional fonts that are available for downloading. There are 35 resident fonts on the card. (See *Table 1* for a list of the type families.) These are the same typefaces included with the Apple LaserWriter. Additional font outlines can be purchased from a number of sources including directly from Adobe Systems.

Compatibility

According to QMS, JetScript is compatible with any software that supports the Apple LaserWriter or a generic PostScript printer and can be configured to send output to an LPT port. I have found that some applications like Ventura Publisher that have the capability of downloading nonresident fonts required in a document do not operate correctly. The simple solution to this problem is to download the fonts manually using JetFonts before running the program. Other than this one exception, the system has worked flawlessly.

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CIRCLE 299 ON READER CARD

Support

For the professional user, customer support is a key factor in the evaluation of any product. My experiences with QMS customer support were excellent. My first JetScript board, purchased from a local retailer, failed intermittently. A QMS support representative quickly established from the serial numbers that my board was an early one and frankly admitted that it had problems. QMS arranged to replace it directly and without question. Several subsequent calls to QMS support to help resolve other minor problems have shown them to be consistently efficient, knowledgeable and helpful.

Who Needs PostScript?

The HP LaserJet is a very capable printer. Why then this expensive PostScript add-on? In my own experience, PostScript makes no sense except in the face of the LaserJet's inherent limitations. Many LaserJet users will never face these shortcomings and will never feel the need for JetScript's enhancements while others quickly will outgrow the standard LaserJet.

The LaserJet's greatest limitation is its limited supply of fonts. Third-party suppliers have moved in quickly to provide a decent library of downloadable fonts, but there is a catch. LaserJet fonts must reside on disc as bit-maps requir-

professional press publications

Today PROFESSIONAL PRESS offers four computing publications. Two are DEC oriented magazines, one magazine is geared to Hewlett-Packard, and the fourth publication is a newspaper for IBM midrange computing. *Plus* two important texts about C language and VAX/VMS.

HP PROFESSIONAL
A monthly magazine written for professional users and managers of Hewlett-Packard's business/commercial and technical computer systems. With over 30,000* buyer qualified-subscribers, it offers by far the largest and most clearly targeted circulation in its marketplace.

CIRCLE 251 ON READER CARD

VAX PROFESSIONAL — The Technical Journal for VMS Systems
This bimonthly publication is the only technical journal dedicated solely to users of VAX/VMS. It's the source of practical advice on how to write better software and make better use of hardware on every VAX system.

CIRCLE 252 ON READER CARD

DEC PROFESSIONAL
The largest circulation DEC publication in existence with over 95,000 subscribers* — 100% buyer qualified* and dedicated to improving staff and equipment performance at DEC installations.

CIRCLE 253 ON READER CARD

MIDRANGE SYSTEMS — The Independent Newspaper for IBM Multiuser Computing
The only high-quality newspaper dedicated to IBM System 34, 36, 38, and AS/400 users. Its focus is on industry news and trends, new products, hardware, software, how-to features and more.

CIRCLE 254 ON READER CARD

INTRODUCTION TO VAX/VMS, SECOND EDITION
This revised and expanded self-teaching text explains and illustrates how to use VAX/VMS systems. Easy to learn for the computing novice . . . an excellent reference for VAX/VMS pros. Covers the basics and teaches systems and programming as well, plus glossary and appendices. Authors: David Bynon and Terry Shannon.

CIRCLE 255 ON READER CARD

LET'S C NOW
A complete guide to learning C language in two volumes. Over 300 pages in 26 chapters in a self-instructing workbook format. All the information needed to become proficient in C. Plus chapter summaries, glossary, and author Rex Jaeschke's hints and suggestions.

CIRCLE 256 ON READER CARD

*December 1988 BPA Publisher's Statements.

ing massive amounts of storage space. For example, a single medium-sized font, 56 point Optima Bold Oblique, requires 467-408 bytes of disc storage, and the file size increases proportionally with the point size of the font. An extensive library of fonts easily can take up 100-MB of disc storage! On the other hand, PostScript uses font outlines. The font outline for Optima Bold Oblique occupies about 79KB and this is all that is required for the interpreter to generate any size font up to 256 points. (A point is 1/72 of an inch.)

Two other serious limitations to the LaserJet is its inability to print reversed type (white type on a black background) and to rotate type. With the JetScript it does both superbly.

To some minds, PostScript may sound excessive, but ultimately, this capability translates into flexibility and ease-of-use for demanding DTP applications.

For some users portability of output is the key issue. A PostScript rendering of a document can be previewed on a 300 dpi laser printer and then reproduced on a Linotronic typesetter for true typeset quality. Some traditional typeset companies are cashing in on the do-it-yourself typeset trend by providing this output service. Typically, they will accept your input on disc or by modem and return your output by courier within 24 hours.

Frequently, the naive user underestimates the hardware requirements for a given application and quickly outgrows his or her initial purchases. The beauty of JetScript is that it provides a relatively painless upgrade path for the user who has run up against the brick wall with the LaserJet. You won't have to throw your printer out, you'll just make it better. — *Bob Youngquist is president of Insight Instrument Corp., Fort Erie, Ontario, Canada.*

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CIRCLE 237 ON READER CARD

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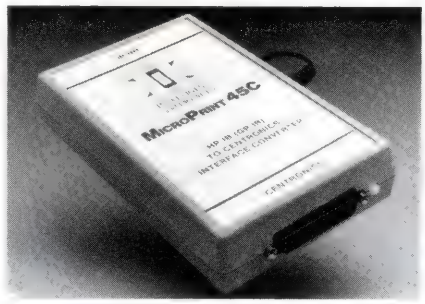

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Continued from page 24.

EEsof Introduces GaAs FET

Xtract is a new software tool from EEsof Inc. that performs linear/nonlinear modeling characterization of microwave and RF GaAs FETs.

Xtract works with ANACAT, EEsof's computer-aided test program. ANACAT acquires the measurement data that Xtract uses to perform FET modeling characterization. ANACAT collects s-parameter data from vector network analyzers (HP 8510, HP 8753, HP 3577, HP 8720 and the Wiltron 360) and DC I-V data acquisition from the HP 4145 and HP 4142 semiconductor parameter analyzers.

From the ANACAT-acquired data, Xtract generates transistor characterization files for EEsof's proprietary Bias-Dependent Transistor Model. In addition to the Bias-Dependent Model, Xtract supports several leading FET models to augment model extraction performance.

Xtract has a built-in capability that lets the user graphically compare modeling results with original measurements so as to immediately judge the quality of the model.

Xtract is available on the following platforms: PCs under MS- and PC-DOS, PCs under OS/2, Apollo, Sun, DEC and HP 9000 Series 300.

The price of the program is $34,500 and varies according to configuration and options. Contact EEsof Inc., 5795 Lindero Canyon Rd., Westlake Village, CA 91362; (818) 991-7530.

Circle 384 on reader card

Non-Stop Labor Data Collection

Peripheral Software Concepts Inc. announced the availability of a host system backup program for its Striped Lightning line bar code-based data collection and shop floor control products. This program will allow time and attendance and labor data collection transactions to continue while the host HP 3000 is not available.

Time and attendance and labor data collection can continue to be collected using Intermec bar code readers (Model 9512 or 9550 with at least 64KB of memory). Augmenting this backup system's capacity, multiple readers can be attached to the HP 3000 and can run this Striped Lightning application concurrently.

Each Intermec device with 64KB of memory will be able to process up to 2,235 time and attendance transactions, or 1,000 direct or indirect labor transactions.

Xtract, by EEsof, for linear/nonlinear modeling characterization of microwave and RF GaAs FETs.

Prices for the HP 3000 host backup program range from $3,000 to $20,000 depending upon the computer model.
Contact Peripheral Software Concepts Inc., 600 Johnson Avenue, Bohemia, NY 11716; (516) 563-7000.

Circle 381 on reader card

Bridge Management Operates On IB3000

Interlan has announced the Bridge Management Station, a network management package that operates with the company's IB3000 family of internetworking bridges. Based upon the proposed IEEE 802.1 network management standards, the product allows operators to create configuration files and store other frequently performed routines in command files on disc. With the new package, network administrators can monitor and control operation of extended networks that are configured with up to 1,024 of the IB3000 family of bridges.

Interlan now is able to offer a means of providing security, traffic filtering and reporting of statistics for any part of a network. Fault isolation and network diagnostics also are simplified. The Bridge Management Station uses any IBM PC AT or compatible located anywhere on a network as a network administration workstation. The workstation downloads operational software to any Interlan IB3000 network bridge allowing the configuration and control of individual bridge operation.

An important feature of the product is its use in configuration and verification of networks. It is specifically intended for proactive network management. A programmable threshold for multiple network statistics and conditions allows a network administrator to establish levels of performance for proper operations and to be notified when those performance threshold levels are exceeded. The same capability is used to reconfigure networks and verify that the configuration has achieved the desired results.

The software package is available for $1,295 and also can be bundled with an NI5210 data link controller board for $1,595. Contact Interlan Systems, 155 Swanson Road, Boxborough, MA 01719; (508) 263-9929.

Circle 380 on reader card

Perwill Announces EDI Package

The Perwill Group announced an Electronic Data Interchange (EDI) package for Industry Standard Personal Computers, suitable for use with Tradanet, for less than 2,500.00 British Pounds (US$4,500.00).

The product, ISM-EDI (Industry Standard Micro-computer-EDI) consists of the PC version of the software products EDIPARSE and EDIFORM with communications manager software and a communication board.

All the user needs is a PC with a hard disc and a modem, as well as connect facilities

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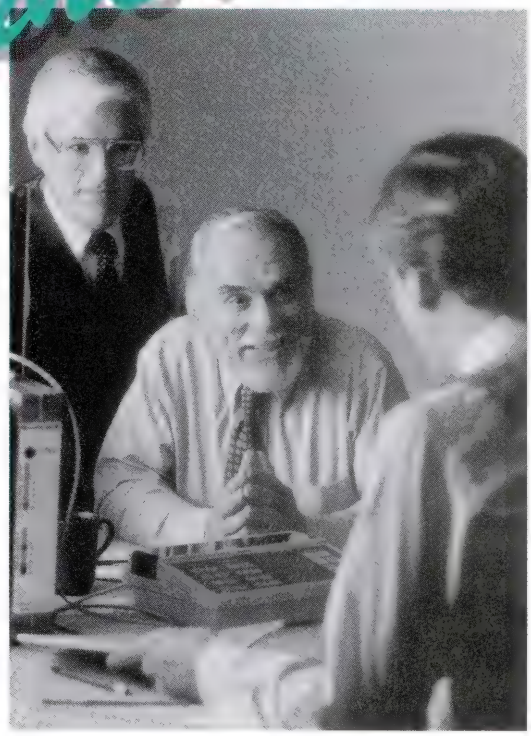

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Every group has its meeting place. In your area, the meeting place for the major manufacturers of OEM peripherals—and the decision-makers that specify and select these products—is the Invitational Computer Conference (ICC). This year there are 12 ICCs dedicated exclusively to the OEM peripheral market in the United States and Canada, and six in Europe. One will be convenient for you.

These one-day, seminar/displays are so popular because they give you just what you need to know without wasting your time or money. You don't travel, there's no admission fee, the seminars and table-top displays from major manufacturers are all targeted to your interests (no searching through aisles), and the atmosphere is informative and hands-on, but congenial, with refreshments served. In a few hours you'll have the latest story on the newest and best in disk and tape drives, controllers, terminals, printers, test equipment, etc.

Invitations to the ICC in your area are available from one of the many exhibitors or the ICC management. Request yours today.

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to a Value Added Network, for example INS or ISTEL in Europe or Compuserve in the United States.

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Circle 379 on reader card

The CAD Approach To Hydrology

The HydroCAD Stormwater Modeling System now will operate under HP-UX, HP's implementation of AT&T's UNIX operating system. The porting of HydroCAD from Rocky Mountain Basic to BASIC-UX gives users the power of multitasking, X-Windows and a fully-networked environment.

To date, the most popular HydroCAD platforms have included the HP 9000 Series 300 Model 310 and 319, and IBM AT compatibles with the Basic Language Processor.

HydroCAD supports A/E plotting and a full spectrum of integrated printing and graphics options, ranging from dot matrix, to LaserJet, to multicolor inkjet output.

Contact Applied Microcomputer Systems, Page Hill Road, Chocorua, NH 03817; (603) 323-8666.

Circle 389 on reader card

Unison Releases SpoolMate Upgrades

Unison Software has announced version A.02 of SpoolMate, the spool file manager.

A reporting feature has been added that cross-references recipient reports and printers. In addition, Spoolmate now has the ability to send spool files to CPUs whose printers are not controlled by SpoolMate. The destination printer and CPU are assigned either through SpoolMate's definition language or through its mapping feature, where SpoolMate redirects all spool files destined for one device to another.

SpoolMate's device manager also has been enhanced. The command to "up" a downed device automatically will restart the associated device manger. High-speed laser printers, such as HP's 2680 and LaserJet 2000, now are subject to special handling in order to maximize throughput, even when printing customized banners for each spool file.

Other new features include automatically releasing files after five minutes of inactivity and the ability to control archiving of a spool file depending on its contents. SpoolMate's error-handling on inter-CPU transmission of spool files has been improved, and it now is possible to suppress forms alignment requests for specific stationary.

SpoolMate ($1,900) is value-priced according to CPU size.

Contact Unison Software, 415 Clyde Ave., Mountain View, CA 94043; (415) 968-7511.

Circle 378 on reader card

New Communications Package Version

MiniSoft has announced the immediate availability of MiniSoft 2392 version 3.0.

MiniSoft 2392 ($95) is a terminal emulation and data communications package designed for the IBM PC family and compatibles. MiniSoft 2392 provides a complete emulation of the Hewlett-Packard 2392 CRT terminal.

MiniSoft 2392 features ASCII/Binary file copy for tranfers between the PC and the HP 3000, DEC VAX, HP 9000 or 1000 computer systems; user configurable function keys; a "hot key" to switch between programs without logging off; support for inverse video, underlining, blinking security and combinations; support for the line drawing and foreign character sets multipage scrolling memory; HP printer function support; editing; configurable display for both color and monochrome models; terminal status line can be toggled on and off; supports HP handshaking and character and block mode capability.

Contact MiniSoft Inc., 16315 N.E. 87th, Suite B101, Redmond, WA 98052; (800) 682-0200 or (206) 883-1353.

Circle 377 on reader card

Advanced Version Of Backup Utility Available

Tymlabs Corporation has announced Version 2.35 of BackPack, its high-speed and unattended system backup utility for the HP 3000. Version 2.35 includes: automatic buffer sizing for unattended backup, reduced RIN requirement, BackPack/XL tape format, utility programs and a new manual.

Contact Tymlabs Corp., 811 Barton Springs Road, Austin, TX 78704; (512) 478-0611.

Circle 368 on reader card

Reveal From O'PIN Makes Reviewing Easier

O'PIN Systems has introduced Reveal version 2.1, a user-friendly report access and distribution tool. With Reveal, reports can be viewed on any terminal or PC. A string search capability allows an extract word or value to be located anywhere in the report. Reports may be scrolled vertically and

horizontally (up to 240 columns). Reveal allows windows to view different sections of a wide report simultaneously.

Reports may be directed to either spooled or locally attached printers for printing in their entirety or printing only selected pages. Because printer setup menus provide a variety of report formatting options for LaserJets, DeskJets and other printers, users never have to worry about configuring fonts, margins and escape sequences.

Contact O'PIN Systems Inc., 8540 West 135th Street, Minneapolis, MN 55124; (612) 432-5602.

Circle 376 on reader card

New Report Display System From CDS

Chestnut Data Systems announced a new release of CDS/SCAN, an on-line report display system, designed for HP 3000 computer systems and terminals.

CDS/SCAN now supports 132 column display features of the HP 700 Series terminals and the management of reports with page formats of up to 88 lines and 240 columns.

Utilities contained within the product will convert, catalog, compress data and establish access via a page number or other specified key field with thermal screen functioning as a window into each report page. Selected pages then can be printed on a specified print device including lasers with optional environment file definitions.

CDS/SCAN can be evaluated on a trial basis. The package is priced at $2,250 and includes documentation and one-year free maintenance.

Contact Chestnut Data Systems, Park Towne Place, Suite SO5, 2200 Benjamin Franklin Pkwy., Philadelphia, PA 19130; (215) 557-6607.

Circle 375 on reader card

TQC Announces Tekbase Enhancement

Test Quality Company (TQC) recently announced the availability of statistical function libraries as enhancements to TekBase, the scientific and engineering relational database management system.

For users of measurement instruments and HP 9000 technical workstations, the Statistical Function Library and the Signal Analysis Function Library bring engineering and scientific functions that operate on arrays of integer, real and complex numbers. The two libraries add the capabilities needed to perform complex data analysis operation, saving users from the time-consuming task

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The Signal Analysis Function Library is especially useful for R7D applications such as analog design, control systems, numerical analysis of mechanical vibrations, optics, radars and thermodynamics. The library solves problems associated with transforming data from the time domain into frequency domain and back again.

Both libraries operate with TekBase under HP-UX, as well as with Pascal and C programmatic interfaces (under HP-UX or the Pascal workstation). The cost of each library is $1,250 under HP-UX and $875 for the Pascal workstation version.
Contact Marketing Department, Test Quality Company, 2316 Walsh Avenue, Santa Clara, CA; (408) 986-8880.

Circle 387 on reader card

New Version of FEDESK Released

Structural Measurement Systems Inc. (SMS) (San Jose, CA) announced the availability of a new release, version 4.6, of the FEDESK (Finite Element Analysis Program). FEDESK combines the finite element method with the interactive graphics and user convenience of the Hewlett-Packard Series 300.

Version 4.6 has been extended to include three-dimensional transient heat transfer including line, plate and solid elements. Boundary conditions include heat flux, prescribed temperatures and fluid convection. The heat transfer facility is integrated with the existing stress analysis and dynamics capabilities in the program. Models may be constructed using the GEOMESH solid meshing capabilities or through the powerful automatic mesh generation commands. All input and editing is interactive.

New spring elements permit the user to model joint stiffness in a static or dynamic stress analysis. A displacement post-processor has been added to permit the selective printing of individual displacements by node and load case or mode. A checking system has been developed to help users find problem areas in the data prior to running the analysis.
Contact Structural Measurement Systems, Inc. 651 River Oaks Parkway, San Jose, CA 95134; (408) 263-2200.

Circle 374 on reader card

HP Unveils VGA-Compatible Controllers

Hewlett-Packard has announced four new preconfigured instrument controllers, featuring video-graphics subsystems, for integration into the HP PC-305 and PC-308 controllers.

Users can collect data via the HP-IB (IEEE-408) interface on the HP BASIC language-processor card and transfer it for statistical or graphical analysis into software packages, such as Lotus 1-2-3.

All controllers include an HP Vectra PC with 640 KB of RAM, 1.44-MB 3½-inch flexible-disc drive, serial/parallel interface, DOS/PAM, HP BASIC language-processor card with 512-KB RAM (expandable to 4 MB), HP-IB interface and HP BASIC in ROM and 3½-inch special-instruction disc. The models vary in price ($4,300-$6,695) according to configuration.
Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.

Circle 373 on reader card

Interlan Introduces Workgroup Concentrators

Interlan has introduced two products, the WG-2500/UTP ($2,695) and WGR-2510/UTP ($2,995) workgroup concentrators, which allow up to eight PCs to be interconnected using unshielded twisted-pair wiring. The products, can be used in conjunction with several Interlan PC adaptors for PC networking.

The workgroup concentrators use existing installed telephone wiring or can be installed by the user with individual patch cords. Each PC can be located up to 360 feet from the concentrator and concentrators can be located up to 360 feet from one another. When concentrators must be cascaded, the WGR-2510/UTP is used for packet retiming and signal regeneration.

Both workgroup concentrators function with Interlan NP600-UTP and NI5210-UTP Workstation Controllers. These products use an RJ45 jack for direct connection to the concentrator.

Both concentrators have front panel indicators to verify link status and proper operation as well as individual workstation status information.
Contact Interlan, 155 Swanson Road, Boxborough, MA 01719; (508) 263-9929.

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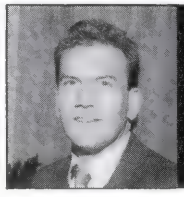

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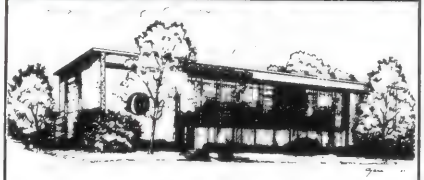

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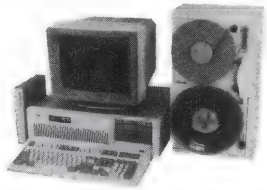

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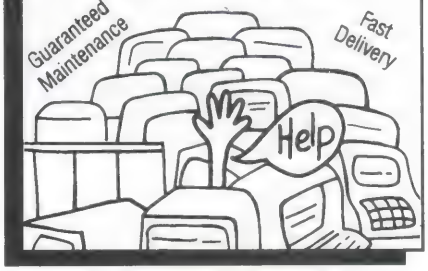

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[CALENDAR]

[DECEMBER]

13-16, 1/10-13: Integrated Computer Systems is sponsoring a four-day seminar, "Advanced C Programming: Hands-On Workshop." Price: $1,395.00. December's workshop is being held in San Fransisco. Information on this and other workshop dates and sites is available by contacting John Valenti, Integrated Computer Systems, 5800 Hannum Ave, Culver City, CA 90231-3614; (800) 421-8166.

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[JANUARY]

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